



**CITY AND COUNTY OF SAN FRANCISCO  
PUBLIC UTILITIES COMMISSION**

**REVENUE REQUIREMENT STUDY**

A REPORT PREPARED FOR  
**SAN FRANCISCO WATER DEPARTMENT**

JULY, 1972

**BROWN AND CALDWELL**  
CONSULTING ENGINEERS  
SAN FRANCISCO-ALHAMBRA, CALIFORNIA

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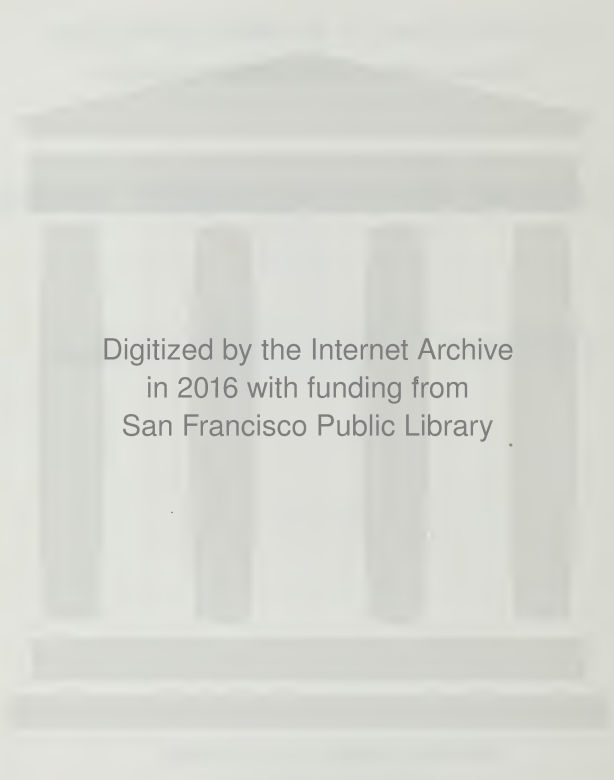
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WATERWORKS • DRAINAGE  
WASTEWATER TREATMENT  
RATE STUDIES • VALUATIONS  
CHEMICAL AND BIOLOGICAL  
LABORATORIES

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F. J. KERSNAR • PE  
J. C. LUTHIN • PE  
T. V. LUTGE • PE

July 17, 1972

Mr. Arthur H. Frye, Jr.  
General Manager and Chief Engineer  
San Francisco Water Department  
425 Mason Street  
San Francisco, California 94101

Dear Mr. Frye:

Pursuant to Public Utilities Commission Resolution No. 71-0100 adopted March 23, 1971, Brown and Caldwell has undertaken an expanded water rate study for the San Francisco Water Department.

In accordance with items 1 through 10 of the agreement, an analysis of the Revenue Requirements of the San Francisco Water Department was undertaken, and is now completed.

The preliminary report transmitted herewith includes a determination of the total revenue requirements of the San Francisco Water Department for fiscal years 1971-1972 through 1976-1977; an equitable allocation of these revenue requirements between the city and suburban customers; and a determination of the average rate increases required from the city and suburban customers to achieve the total revenue requirements.

This report comprises Part 2 of our water rate study for the SFWD. Part 1, entitled "Evaluation of Annual Hetch Hetchy Assessment to the San Francisco Water Department," was submitted in January, 1972.

Respectfully submitted,

BROWN AND CALDWELL

By John C. Luthin  
John C. Luthin, Vice President

By Harris Zetlow  
Harris Zetlow



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## CHAPTER 1

### INTRODUCTION

All water rates of the San Francisco Water Department were uniformly increased by 15 percent on June 1, 1970, in accordance with the recommendations contained in the Water Rate Study prepared by Brown and Caldwell, dated January, 1970.

Representatives of Peninsula purveyor customers agreed not to protest that rate increase, provided that an expanded rate study was also undertaken which would include a study of allocation of annual revenue requirements among the several classes of service.

#### Authorization

In accordance with that agreement, the Public Utilities Commission (by PUC Resolution No. 71-0100, dated 3-23-71) authorized Brown and Caldwell to further review costs and revenue records of the water department and Hetch Hetchy Department, and to develop revenue requirements and water rates, giving appropriate recognition to all capital costs, sources of funds, and to allocation of revenue requirements among classes of service.

This report is submitted in response to that assignment.

#### Scope of Study

Objective and scope of the work done in preparation of this report was spelled out in the contract cited above, and is as follows:

"The objective of the study will be to prepare a report in which rates for water service rendered by the San Francisco Water Department will be developed from a considered analysis of past, present, and near future capital and operating costs.

Recognition will be given to the annual capital and operating costs of producing power and water at Hetch Hetchy, the annual capital and operating costs of producing water from local supplies, and the assignment of water production, treatment and transmission costs between the City and County of San Francisco and the suburbs. The annual capital costs and operating costs of serving each class of customer within the City and County of San Francisco will also be determined. From these data rates will be established for all classes of customers.

The latest recorded year of operation of the Hetch Hetchy Project and the Water Department will be used as the base year for projecting annual revenue requirements for future years. A year in the near future will be selected as the test year for rate making purposes. Revenue requirements for the test year will be allocated to classes of customers on the basis of cost of service studies.

All past capital costs will be adjusted for the time value of money."

### Conduct of Study

The conduct of this study was also spelled out in the contract, and is outlined below:

1. An analysis of the capital costs of the Hetch Hetchy Project will be made by years from its inception to date. These capital costs will then be assigned to water and power production giving appropriate consideration to:

- (a) Plant accounting formulae adopted by the San Francisco Public Utilities Commission.
- (b) Sources of funds for construction.
- (c) Income from taxes, sale of power, and sale of water.
- (d) Proportionate use of facilities for water and power production.
- (e) The economic value of the segments of joint facilities.

2. Consideration will be given to the allocation of Hetch Hetchy Project cost of water production and transmission to the City of San Francisco and the suburbs, giving appropriate attention to:

- (a) The planned utilization of these facilities.
- (b) The recorded annual average and peak fractional use of plant capacity utilized in serving the City of San Francisco and suburbs respectively.
- (c) Income from tax levies and from the sale of water in the City of San Francisco and suburban areas.
- (d) The economic value of the segments of these joint facilities.

3. Reports of proposed improvements to be made to the Hetch Hetchy Project will be studied, and annual capital costs will be assigned to power and water production and transmission, and the annual capital costs of water production and transmission will be assigned to the City of San Francisco and the suburbs.

4. The preliminary findings resulting from studies under items 1, 2 and 3 shall be reviewed with the San Francisco Water Department and selected representatives of suburban consumers.

5. From these data (1, 2, 3 above) the annual cost of water production and transmission to the point of delivery to the San Francisco Water Department will be determined. This will fix the base demand and commodity costs of water at the point of delivery to the San Francisco Water Department.

6. A cost analysis will be made to determine the demand and commodity components of cost chargeable to the City of San Francisco and to the suburbs.

7. A study will be made of the past, present, and future costs of plant construction of that portion of the San Francisco Water Department facilities outside the city boundaries and the annual capital costs will be assigned to the City of San Francisco and suburbs. In assigning these annual costs appropriate consideration will be given to:

- (a) Plant accounting formulae adopted by the San Francisco Public Utilities Commission.
- (b) Sources of funds for construction.
- (c) Income from taxes and sale of water used to service the capital costs.
- (d) Proportionate use made of joint facilities.
- (e) Economic value of the segments of joint facilities.

8. A study will be made of the annual operating expenses, depreciation expense, and taxes of the transmission, treatment, and storage facilities from the point of beginning of the San Francisco Water Department to the City boundaries.

9. A cost of service study will be made to assign the annual capital and operating costs of the Alameda and Peninsula facilities to the City and the suburbs.

10. A study will be made of the annual operating expenses, depreciation expenses, taxes, and capital costs of the City of San Francisco system.

11. A study will be made of the cost of providing service to each class of customers inside the City.<sup>a</sup>

12. An analysis of past capital expenditures financed by taxes levied against the property owners in the City of San Francisco will be made to determine the annual amount, if any, that should be credited to the general fund of the City.

<sup>a</sup> Subsequently deleted from contract.

13. The findings of items 1 through 12 will be reviewed with the San Francisco Water Department and selected representatives of suburban consumers.

14. Schedules will be prepared of rates for all classes of customers inside the City and in the suburbs.

15. A report will be prepared setting forth the findings and recommendations.

16. The report will be presented to the appropriate governing bodies.

The conduct of the work done in the course of this study coincides with the foregoing outline. Emphasis of each of the several phases of the work was appropriate to the needs of this study. Additional work was done as deemed necessary.

Numerous meetings were held in the San Francisco Water Department offices with department staff members. These sessions were used to gather data needed for the studies, and to discuss progress and conduct of the work.

Many sources of information were used in preparing this report. All of the annual reports and statements of the San Francisco Water Department were available and were used. Most of the published reports and documents used in the course of the work are listed in Appendix A and B.

## CHAPTER 2

## SAN FRANCISCO WATER DEPARTMENT HISTORY AND DESCRIPTION

The San Francisco Water Department is unique in that the major portion of the water delivered by it is utilized outside the City and County of San Francisco. About 60 percent of total annual use, and two-thirds of the use on peak demand days, occurs outside the city.

A brief history and description of the San Francisco Water Department helps in understanding this development.

History of San Francisco Water Supply

Local springs and wells plus supplemental water imported by barge furnished San Francisco with its water requirements until the year 1857, when the San Francisco Water Works began operations. Lobos Creek, a small stream flowing through the Presidio, was tapped, and its water was pumped to the Lombard and Francisco reservoirs, both of which are still in use. These reservoirs, in turn, fed a network of distribution mains which extended throughout the settled portion of the city.

Spring Valley Water Company

In 1860 the Spring Valley Water Works (later the Spring Valley Water Co.) was organized. The utility's first supply came from Islais Creek and was transported to a reservoir at 16th and Brannan Streets.

The Spring Valley Water Works also secured water rights and property in San Mateo County in order to develop additional supply and storage facilities.

Their first large distribution reservoir, called Laguna Honda, was constructed in 1861 and received water from Pilarcitos Creek in 1862.

In 1865 the Spring Valley Water Works absorbed the San Francisco Water Works, thus gaining a monopoly which lasted until 1930.

Beginning in 1867, friction began to develop between the Spring Valley Water Works and the consumers in San Francisco, and the city became interested in acquiring its own water system.

In 1875, a special study committee advised the city to secure water rights and lands on Calaveras Creek in Alameda and Santa Clara counties. To forestall the city's acquisition of that source for its own use, the Spring Valley Water Works bought those rights and lands as well as others on the Alameda Creek system.



Water was first brought to the city from these sources in 1888. A new city charter became effective in 1900, however, stating that the public utilities "shall be gradually acquired and ultimately owned by the city and county." As a result, the city engineer undertook a comprehensive survey of possible alternative water sources.

#### Development of Hetch Hetchy System

In 1901 the city engineer reported on fourteen possible water sources, and the Tuolumne River system, later called the Hetch Hetchy system, was chosen.

However, the reservoir sites were in the Stanislaus National Forest and in Yosemite National Park, the latter under the jurisdiction of the Department of Interior.

In 1901, application was filed for permission to construct the dams and necessary conduits and to use the reservoir sites. Permission was denied initially, but Secretary of the Interior James R. Garfield ultimately approved the application.

The permit granted the city rights-of-way for conduits, dams, and reservoirs, but was revocable under certain conditions. On the basis of the permit, the people of San Francisco voted a \$ 600,000 bond issue on November 12, 1907, and another for \$ 45,000,000 on January 14, 1910, to build the Hetch Hetchy system.

Revocation of a part of the Garfield Permit occurred on February 25, 1910, and the city then decided to go to Congress for a grant of the desired privileges.

#### Raker Act

After protracted debate, Congress passed the Hetch Hetchy grant, known as the Raker Act, and President Wilson signed the bill on December 19, 1913.

Construction of the Hetch Hetchy System, as described in Chapter 2, has proceeded without interruption from that date to the present time.

With the construction of the Hetch Hetchy System, popular sentiment for the acquisition of the Spring Valley Water Co. by the city began to grow.

On March 3, 1930, the San Francisco Water Department purchased all water rights and operative properties from the Spring Valley Water Co. under authorization of a referendum held May 1, 1928 on a \$ 41,000,000 bond issue.

In addition to the water rights, the operative properties included existing reservoirs, watershed lands, aqueducts, rights-of-way, and the distribution system in San Francisco.

Approximately four years later the Hetch Hetchy Aqueduct was completed, and the first delivery of water to the San Francisco Water Department occurred on October 18, 1934.



### Division of Authority

Until January 8, 1932, both Hetch Hetchy and the water department were under the city's department of public works. By authority of the new charter effective on that date, the two departments were taken over by the then newly formed public utilities commission, under whose jurisdiction they still operate.

Hetch Hetchy's responsibility for transmission of water ends at Alameda East Portal in Alameda County, where the water department assumes responsibility.

Section 122 of the Charter of the City and County of San Francisco requires that the Hetch Hetchy Project, on completion, be merged with the Water Department. In the opinion of the City Attorney, the project had not been completed at June 30, 1971. However, a charter amendment has been approved by the electorate to permit a merger prior to physical completion, upon recommendation by the Public Utilities Commission and approval by the Board of Supervisors by a two-thirds vote. The Public Utilities Commission does not consider it to be in the public interest to merge these departments at this time.

### Description of Water Department System

The Water Department system is organized into three operating divisions: Alameda, Peninsula, and City Distribution.

The Alameda system includes four water-producing units, all located within the drainage area of Alameda Creek. The principal sources of supply are Calaveras and San Antonio Reservoirs, and two underground sources, the Sunol Infiltration Galleries and the Pleasanton Well Field.

The Peninsula system, consisting of three reservoirs, transmission mains and pump stations, is located in San Mateo County. The reservoirs -- Pilarcitos, San Andreas, and Crystal Springs (upper and lower) -- have a combined watershed area of 32 square miles.

In addition, the Hetch Hetchy transmission pipelines between Irvington Portal in the Alameda Division and Pulgas Tunnel in the Peninsula Division are known as Bay Division Pipelines No. 1, 2, 3, and 4. The title "Bay Division" is a carry-over from the original Hetch Hetchy system. The first two bay conduits were constructed as part of the bay portion of the Hetch Hetchy system which was called the Bay Division. The name was retained when the transmission lines were transferred to the water department system.

The City Distribution System includes the five terminal reservoirs receiving water from the Peninsula transmission mains, and the distribution reservoirs, tanks, pumps, and mains used in delivering water to consumers within San Francisco.

### Bay Division Pipelines

Between the Alameda East and West Portals the Hetch Hetchy aqueduct consists of three pipelines known as the Alameda Siphon.

From the siphon the water enters the second section of the Coast Range Tunnel. The western end of that tunnel is known as Irvington Portal.

From Irvington Portal four pipelines carry water to Pulgas Tunnel, and these are known as Bay Division Pipelines No. 1, 2, 3, and 4. No. 1 and 2 are parallel in the same right-of-way and cross San Francisco Bay. No. 3 and 4 are located around the south end of the bay.

Pipeline No. 1 was built by the Hetch Hetchy Department in 1925 and is 21.3 miles long, including 0.6 miles of submarine pipe laid under Newark Slough and the navigable portion of San Francisco Bay.

Pipeline No. 2 was laid during 1935-1936 and is also 21.3 miles long, including two parallel submarine sections each 0.6 miles long with provisions for inter-connections of all siphons to a common header with certain separating valves on the easterly end and two risers with certain separating valves on the westerly end.

Pipelines No. 3 and 4 were constructed around the bay to provide service to the South Bay area and to reduce the hazard of having all the main pipelines on trestles, bridges, and under the bay.

Pipeline No. 3 was completed in 1952 and is 33.9 miles long. All but the last section of Pipeline No. 4 is completed and the last section now under construction is scheduled for completion in early 1973.

The first consumers who receive water from the Hetch Hetchy aqueduct are connected to the Alameda Siphon. From that location to Crystal Springs the many service connections account for approximately two-thirds of the suburban consumption; the balance is taken north of Crystal Springs.

### Alameda Division

Local sources in the Alameda Division were initially developed by the Spring Valley Water Co. with some changes and additions made by the city. The Alameda source is the Alameda Creek drainage area. Four developments on this creek and its tributaries have been completed.

Calaveras Reservoir. The principal development in Alameda County is Calaveras Dam; this dam and another dam on Upper Alameda Creek, which diverts water into the reservoir through a two-mile tunnel, have a total catchment area of 135 square miles in southern Alameda and northern Santa Clara counties. Calaveras Dam was completed in 1925. Calaveras water can be delivered through the Calaveras Pipeline by gravity to the Bay Division Pipelines through a

connection at the Alameda Siphon, either directly or through the filtration plant. It can also be delivered to the San Antonio Reservoir for storage, to conserve local runoff.

San Antonio Reservoir. The San Antonio Reservoir, completed in 1965, was formed behind James H. Turner Dam and impounds runoff from a 40 square-mile watershed. This facility also provides additional terminal storage for water from Hetch Hetchy and other sources, as a possible emergency supply, and to meet high periodic demands in the South Bay Area. Water from San Antonio can be delivered to the Bay Division Pipelines at Alameda Siphon either directly, through the filtration plant, or through the Sunol Infiltration Galleries and Irvington Pumping Station.

Sunol Galleries. Approximately 9 miles downstream from the Calaveras Dam are the Sunol Filter Galleries, a system of underground concrete galleries and perforated pipe which collect the water percolating through the gravels. Creek water is impounded by Sunol Dam to increase the yield.

Under normal operation this water is pumped to the San Antonio Reservoir or the Sunol Filtration Plant. This water is also used to supply irrigation water requirements in the walnut orchard area and, in an emergency, can be chlorinated and delivered to the Bay Division No. 1 and No. 2 lines via the Irvington Pump Station. Water surplus to pumping requirements is delivered to Alameda County Water District near Niles via the Sunol aqueduct to satisfy an obligation under a water right agreement inherited by San Francisco as successor to the Spring Valley Water Company.

Pleasanton Well Field. Another Alameda source is the Pleasanton Well Field located in the Livermore Valley. This was an important source of supply until 1949 but the diminishing supply due to a receding groundwater level led to a quitclaim of diversion rights in 1961. The water is now used on overlying lands and to satisfy the requirements of an old water right agreement with Castlewood as successor to the Hearst Ranch.

Sunol Valley Water Filtration Plant. The first stage of the Sunol Valley Water Filtration Plant was completed in 1966. This plant provides treatment for turbidity, color, taste, and odor. All water delivered from Alameda County sources enters the SFWD system through this treatment plant. The first stage has a design capacity of 40 million gallons per day and the second will bring the capacity to 80 million. This plant can be operated at up to 100 percent overload.

#### Peninsula Division

The major components of the Peninsula Division are the three impounding reservoirs which were acquired from the Spring Valley Water Co.

Pilarcitos Reservoir. The first of the peninsula sources to be used was Pilarcitos Creek, which flows to the west into the Pacific Ocean. Use of water from this source started in the 1862-63 season and has continued until the present.



Suburban Distribution System

More than 200 miles of transmission mains under the jurisdiction of the SFWD are located outside the city and, as of June 30, 1971, supplied 633 active metered services, including fire protection services.

Re-sale Customers. In 1970-71, 95 percent of the suburban water consumption was accounted for by the 30 re-sale customers, located in Alameda, Santa Clara and San Mateo counties, as follows:

<u>Alameda County</u>	<u>Number</u>
Municipal Re-sale Customers	1
District Re-sale Customers	1
 <u>Santa Clara County</u>	
Municipal Re-sale Customers	5
District Re-sale Customers	1
 <u>San Mateo County</u>	
Municipal Re-sale Customers	8
Investor Owned Utilities	1
Airport Re-sale Customers	1
District Re-sale Customers	<u>12</u>
 Total	<u>30</u>

The investor owned utility company serves water in eight different areas.

City Distribution Division

The water distribution system in San Francisco is extremely complicated because of the many hills. Elevations range from sea level to 900 feet, with abrupt changes in many areas. To provide adequate service to consumers, major pressure zones have been established within the limitations of available sites for reservoirs and tanks.

City Distribution Storage. Each of the five transmission mains from the Peninsula reservoirs discharges into one or more of five receiving reservoirs within the City. University Mound and Merced Manor reservoirs are at elevations sufficiently low to receive water by gravity from Hetch Hetchy Aqueduct and from Crystal Springs Reservoir. Merced Manor can receive water by gravity also from San Andreas. Sunset and College Hill reservoirs can be supplied by gravity from San Andreas and by pumping of Crystal Springs water at Lake Merced Pump Station. Suto Reservoir receives water by pumping via the Lake Merced Pump Station and either San Andreas or Crystal Springs water may be used.

A sixth major receiving reservoir, the Balboa, is partially constructed. It too will be capable of receiving water by gravity from San Andreas and by pumping of Crystal Springs water at either the Lake Merced or Alemany Pump stations.

Two other reservoirs, Lake Merced and Laguna Honda, are no longer being used for reservoir purposes. Lake Merced is now being used primarily for recreation but it can be used in an extreme emergency as there is an intake to the Lake Merced Pump Station. Lake Honda has not been used for over thirty years but the water could be made available if an extreme emergency required it.

Including the five receiving reservoirs, there are a total of eleven distribution reservoirs in service at elevations ranging from 135 to 800 feet.

Supplementing the distributing reservoirs are eight storage tanks at elevations from 290 to 900 feet. These tanks serve small, isolated areas where this method of providing service is more economical. Total storage capacity of the reservoirs and tanks within San Francisco is approximately equal to about four days' consumption.

City Distribution System. San Francisco varies in elevation from sea level to more than 900 feet above sea level. There are many hills of varying elevations, all of which require water service through a complicated distribution and pressure-zoning system.

Water pressures in the distribution system, as far as possible, are main-lined at 40-80 psi. In addition to the eleven distribution reservoirs and eight storage tanks, the system also includes eight attended or automatic pumping stations of varying capacities, to supply reservoirs and tanks at the higher elevations. Hydropneumatic pressure systems are also used for maintaining pressure in small areas having no storage facilities for gravity flow.

San Francisco's distribution system is comprised of over 1,150 miles of pipe, not counting transmission mains and hydrant connections, and the sizes vary from five feet in diameter to three-quarters of an inch. All water delivered to consumers is metered. As of June 30, 1971 there were 156,798 active metered services within the City and County of San Francisco, including private fire protection services.



## CHAPTER 3

FINANCIAL STATEMENTS AND RESULTS OF OPERATION  
FOR FISCAL YEAR 1970-1971

A summary of the financial status of the San Francisco Water Department, as of June 30, 1971, is indicated by the financial statements and exhibits contained in this chapter.

Table 3-1. SFWD Sources and Application of Funds, Balance Sheet  
Fiscal Year 1970-1971, dollars

Description	Total
<u>Revenues</u>	
Sale of water - City	14,225,000
Sale of water - Suburban	12,134,000
Muni non-paying	(1,494,000)
Miscellaneous income	1,456,000
Total revenues	26,321,000
<u>Expenditures</u>	
Hetch Hetchy Assessment	4,500,000
Taxes	1,492,000
Operating and Maintenance	
Expense	10,615,000
Bond interest	1,203,000
Bond redemption	1,800,000
Reconstruction and replacements	2,092,000
Additions and betterments	1,088,000
Equipment	158,000
Total expenditures	22,948,000
Excess of revenues over expenditures <sup>a</sup>	3,373,000

<sup>a</sup> This balance is already encumbered, and is being used to fund budgeted capital expenditures

in accordance with the current capital improvement program, described in Chapter 5.

An analysis of each of the individual revenue and expense accounts is contained in Chapters 6 and 7.

### Utility Plant in Service

The utility plant, by account, at June 30, 1971 is presented at the end of this chapter.

The balance sheet for the SFWD as of June 30, 1971 is shown on the following three pages.

The composition of the net capital investment (surplus) account, which is not detailed on the balance sheet, is shown immediately following the balance sheet.

### Sources and Application of Funds

The total recorded actual cash expenditures, including all capital costs, have been detailed in Table 3-1, as have the revenues from all sources.

In fiscal year 1970-1971, an excess of revenues over expenditures of \$ 3,373,000 was realized.

However, this entire amount was encumbered for subsequent construction, in accordance with the current capital improvement program, described in Chapter 5.

## BALANCE SHEET

JUNE 30, 1971

## ASSETS AND OTHER DEBITS

## PROPERTY, PLANT AND EQUIPMENT:

Utility plant in service:	
Water rights and other intangibles	\$ 3,222,913
Tangible plant	184,244,999
Utility plant not in service	655,030
Other physical property	0
Total	<u>188,122,942</u>
Less accumulated depreciation	<u>57,214,407</u>
	130,908,535
Construction in progress	<u>12,934,000</u>
Property, plant and equipment - net	<u>143,842,535</u>

## CASH:

On deposit with Treasurer	18,112,777
Revolving funds	<u>30,000</u>
Total cash	<u>18,142,777</u>

## ACCOUNTS RECEIVABLE:

Consumers' accounts	2,733,436
Less allowance for doubtful accounts	<u>284,366</u>
	2,449,070
Rentals, claims and miscellaneous accounts	<u>181,123</u>
Accounts receivable - net	<u>2,630,193</u>

## INTERFUND ACCOUNTS RECEIVABLE:

General city departments and funds	1,293
Public service enterprises	<u>124,981</u>
Total interfund accounts receivable	<u>126,274</u>

(continued)



## ASSETS AND OTHER DEBITS (continued)

## OTHER ASSETS:

Materials and supplies - at average cost	\$ 792,350
Other work in progress - at cost	578,024
Deferred charges	0
Anti trust suits settlements receivable	<u>34,450</u>
Total other assets	<u>1,404,824</u>
Total assets	<u><u>\$ 166,146,603</u></u>

## LIABILITIES AND OTHER CREDITS

## BONDED DEBT:

Matured bonds not presented for payment	\$ 13,000
Maturing within one year	2,108,529
Maturing subsequent to June 30, 1972	<u>34,178,716</u>
Total bonded debt	<u>36,300,245</u>

## BOND INTEREST PAYABLE:

Matured coupons not presented for payment	3,550
Due July 1, 1971	
Accrued - due subsequent to July 1, 1971	<u>0</u>
Total bond interest payable	3,550

## ACCOUNTS PAYABLE:

Warrants outstanding and payroll deductions	752,771
Accounts payable	846,641
Accrued payrolls	7,960
Retained percentages due contractors	<u>958,297</u>
Total accounts payable	<u>2,565,669</u>

## INTERFUND ACCOUNTS PAYABLE:

General city departments and funds	205,423
Public services enterprises	<u>357,578</u>
Total interfund accounts payable	<u>563,001</u>

## DEPOSITS AND CONSTRUCTION ADVANCES

403,347

## RESERVES AND DEFERRED CREDITS:

Deposits received on land condemnation proceedings	3,500,000
Injuries and damage reserve	<u>75,000</u>
Total reserves and deferred credits	<u>3,575,000</u>

Total liabilities	<u>43,410,812</u>
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## NET CAPITAL INVESTMENT

122,735,791

Total liabilities and net capital investment	<u>\$ 166,146,603</u>
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## COMPOSITION OF SURPLUS (NET CAPITAL INVESTMENT)

JUNE 30, 1971

Initial Surplus-March 3, 1930	\$ 4,152,652		
Amortization on Contribution (Spring Valley)	<u>100,000</u>		
Valuation of Municipal Water Works	4,252,652		
Less:			
Additional allowance for Depreciation - March 1, 1920 to March 3, 1930	2,327,917	\$ 1,924,735	
Additions:			
Net Income - March 3, 1930 to June 30, 1971	133,784,256		
Miscellaneous and year to year adjustments	6,830,335		
Contributions from Hetch Hetchy Power Division	409,471		
Contributions from 1947 Hetch Hetchy Water Bond Fund	<u>290,517</u>	141,314,579	
Grants earned on Federal Public Works Project		2,358,988	
Book Value of Plant Appraisal - June 30, 1948		<u>83,864</u>	\$ 145,682,166
Deductions:			
Contributed to General Fund		15,922,457	
Contributed to Hetch Hetchy Water Supply		4,466,014	
Lands contributed to City and County of San Francisco for streets and boulevards		172,565	
Book value of plant appraisals - various	<u>2,385,339</u>	<u>22,946,375</u>	
Surplus - June 30, 1971			<u><u>\$ 122,735,791</u></u>

## UTILITY PLANT IN SERVICE

JUNE 30, 1971

Capital Balance  
June 30, 1971

Intangible Plant

Other Intangible Plant \$ 3,222,913

Landed Capital

Source of Water Supply	10,349,607
Pumping Stations	36,916
Purification	99,848
Right of Way Easements	1,293,460
General Office and others	<u>3,005,980</u>
	14,785,811

Source of Supply Plant

Structures and Improvements	1,745,078
Collecting and Impounding Reservoirs	15,278,068
Lakes, Rivers, and Other Intakes	267,456
Springs and Tunnels	519,108
Wells	197,884
Supply Mains	<u>50,077,119</u>
	68,084,713

Pumping Plant

Structures and Improvements	1,580,555
Pumping Equipment	<u>2,890,532</u>
	4,471,087

Water Treatment Plant

Structures and Improvements	4,164,526
Water Treatment Equipment	<u>1,738,194</u>
	5,902,720

(continued)

Utility Plant in Service (Continued)  
June 30, 1971

Transmission & Distribution Plant - Inside San Francisco

Structures and Improvements	\$ 25,173
Reservoirs and Tanks	10,995,968
Transmission Mains	395,128
Distribution Mains	33,605,913
Services	14,215,444
Meters	<u>5,064,385</u>
	64,302,011

Transmission and Distribution Plant - Outside San Francisco

Structures and Improvements	66,808
Reservoirs and Tanks	14,437
Transmission Mains	16,125,500
Distribution Mains	1,184,565
Services	386,229
Meters	<u>433,827</u>
	18,211,366

General Plant

Structures and Improvements	2,037,226
Office Furniture and Equipment	275,613
Transportation Equipment	1,239,622
Stores Equipment	74,458
Laboratory Equipment	74,229
Communications Equipment	232,038
Power Operated Equipment	110,742
Tools, Shop and Garage Equipment	276,882
Other General Plant	<u>184,512</u>
	4,505,222

Undistributed Items

Other Physical Property	655,030
Miscellaneous Intangible Plant	<u>3,982,069</u>
	4,637,099

Grand Total - Water Plant in Service \$ 188,122,942

## CHAPTER 4

CURRENT OPERATIONS, POPULATION AND  
WATER PRODUCTION REQUIREMENTS

In fiscal year 1970-1971, 42 percent of the metered delivery in SFWD's water system occurred within the city and county of San Francisco, while 58 percent of the metered delivery occurred in the suburban service areas. Suburban usage has exceeded city usage since fiscal year 1962-1963.

Population Growth

Population totals for the four counties served by SFWD, as contained in the last five census reports, are indicated in Table 4-1. The unprecedented growth of the suburban areas, coupled with the decline within the city, is also shown in Fig. 4-1.

Table 4-1. Population Growth by County (Four Counties Served by SFWD)

County	April 1 population census				
	1930	1940	1950	1960	1970
San Francisco	634,394	634,536	775,357	740,316	715,674
Alameda	474,883	513,011	740,315	908,209	1,073,184
Santa Clara	145,118	174,949	290,547	642,315	1,064,714
San Mateo	77,405	111,782	235,659	444,387	556,234

Water Consumption

Actual average annual metered delivery in mgd (millions of gallons per day) in both the city and suburban service areas for the past 40 years, (since acquisition of the Spring Valley Water Co. by the city), is shown in Fig. 4-2. Projected deliveries through Fiscal Year 1976-1977 are indicated also. These projected deliveries are consistent with the projected deliveries of Hetch Hetchy water which were indicated in Fig. 5-1 of the January, 1972 report.

The changing population pattern is reflected in the changing ratio of demand between the city and suburban areas, as expected.

The actual deliveries in Mcf (millions of cubic feet) and the ratio of demand between the city and suburban service areas for fiscal years 1965-1966 through 1970-1971 have been indicated in Table 4-2. The projected deliveries and ratios of demand are also shown through 1976-1977.

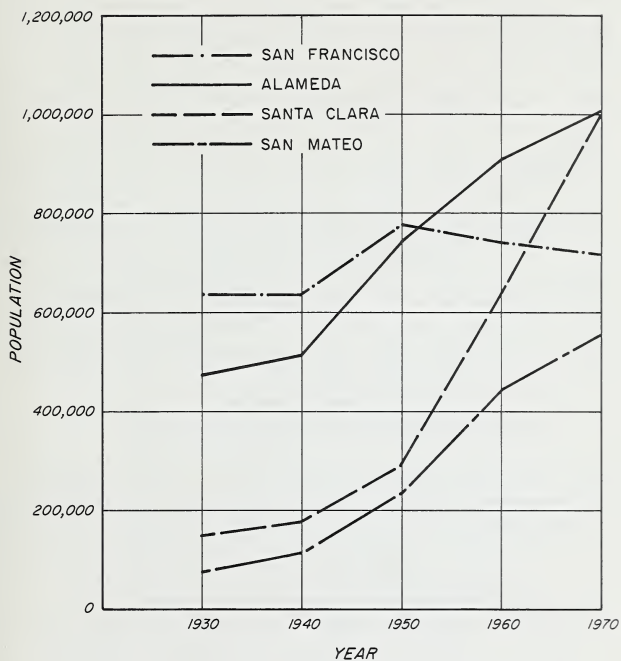


Fig. 4-1. Population Growth by County (Four Counties Served by SFWD)





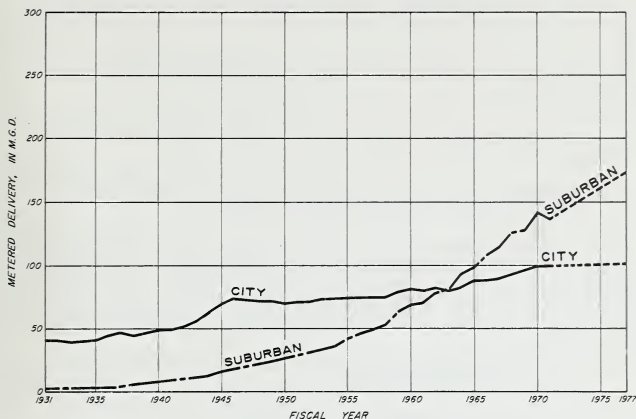


Fig. 4-2. Average Daily Metered Delivery in MGD for City and Suburban Service Areas (Actual for Fiscal Years 1930-1931 through 1970-1971; Projected through 1976-1977)

Climatological Data. The actual delivery totals indicated in Fig. 4-2 and Table 4-2 appear not to have been significantly affected by variations in either temperature or rainfall. Because of the size and complexity of the SFWD service area, and its diverse characteristics, adjustment of total system demand for temperature and rainfall would be highly conjectural.

Table 4-2. Actual and Projected Deliveries in M.C.F. (City and Suburban)

Fiscal Year	City	Suburban	Total	City, percent	Suburban, percent
1966	4260.1	5272.6	9532.7	44.69	55.31
1967	4352.5	5589.8	9942.3	43.78	56.22
1968	4502.0	6089.3	10591.3	42.51	57.49
1969	4689.0	6184.4	10873.4	43.12	56.88
1970	4813.3	6820.1	11633.4	41.37	58.63
1971	4818.5	6653.0	11471.5	42.00	58.00
1972	4829.0	6953.6	11782.6	40.98	59.02
1973	4841.0	7254.2	12095.2	40.02	59.98
1974	4853.0	7554.8	12407.8	39.11	60.89
1975	4865.0	7855.4	12720.4	38.25	61.75
1976	4877.0	8156.0	13033.0	37.42	62.58
1977	4889.0	8456.0	13345.0	36.64	63.36

(Projected suburban consumption increasing at approximately 4.5 percent annually)

Demand in each portion of the service area is affected to a greater or lesser degree by temperature and rainfall, for three reasons:

--There is a more extensive use of water for landscape irrigation in some areas than in others. This is the usage most susceptible to variations in temperature and precipitation.

--Some areas obtain all of their water from SFWD, while others obtain only a portion from SFWD, and those ratios vary.

--In those areas taking supplemental water, climate-caused variations in adequacy of local supplies will affect demand from SFWD.

The mean annual temperatures over the last six years, for various communities and facilities within the SFWD service area, are indicated in Table 4-3, (U.S. Government Climatological Data), as are the long-term norms. With the exception of 1971, the service area as a whole appears to have experienced above-average temperatures during most of those years, which would have tended to cause increased water usage.

Table 4-3. Climatological Data - Temperature (SFWD Service Areas), by Calendar Year

City or facility	Mean annual temperature, ° F						Normal
	1966	1967	1968	1969	1970	1971	
Half Moon Bay	54.1	55.0	55.0	53.2	54.4	52.7	NA
Livermore	58.6	58.4	59.0	59.6	59.8	58.0	59.1
Newark	58.0	58.4	58.5	59.4	59.5	57.5	NA
Palo Alto	NA	NA	58.8	58.2	58.4	57.2	NA
Redwood City	59.6	59.0	59.1	58.9	59.6	58.0	58.7
San Francisco							
International Airport	56.3	56.9	56.7	56.9	57.6	55.7	56.9
San Francisco	56.8	56.9	57.0	56.5	57.0	55.6	56.8
San Jose	59.9	59.5	59.8	59.6	60.3	58.5	59.4
San Mateo	59.7	59.4	59.9	58.8	58.9	58.0	58.5
Santa Clara	60.0	60.1	60.3	60.1	60.7	59.1	58.9

NA = Not available

In addition, the total annual precipitation over the last six years, for various communities and facilities within the SFWD service area, has been indicated in Table 4-4, (U.S. Government Climatological Data), as are the long-term norms. With the exception of 1971, the service area as a whole appears to have experienced above-average rainfall during most of those years. This would have tended to cause decreased water usage.

Except for calendar year 1971, recent years appear to have been both warmer and wetter than normal, for the SFWD service area as a whole. Calendar year 1971, however, was both cooler and dryer than normal. Since both of those combinations of temperature and rainfall exert countervailing tendencies on the usage of water, the changes in demand over the past six years are presumed to be primarily due to causes other than climate.

In particular, the decline in suburban deliveries in fiscal year 1970-1971 appeared to be related to changes in the economy, especially in Santa Clara County.

Table 4-4. Climatological Data - Rainfall (SFWD Service Areas), by Calendar Year

City or facility	Total annual precipitation, inches (unadjusted)						Normal
	1966	1967	1968	1969	1970	1971	
Livermore	9.00	18.66	13.76	16.84	19.69	9.08	14.40
Redwood City	13.15	26.30	18.32	27.64	27.59	10.93	19.26
San Francisco							
International Airport	15.98	27.27	18.02	28.07	25.69	9.80	18.69
San Francisco	16.45	24.26	17.96	27.02	24.25	12.32	20.78
San Jose	8.60	18.01	15.64	18.25	18.52	8.45	13.11
Santa Clara	10.15	18.84	15.06	18.05	18.76	8.06	14.01
Burlingame	16.80	28.97	19.58	27.11	28.78	11.72	17.97
Calaveras Reservoir	13.07	27.69	20.43	24.04	28.48	14.62	21.92
Half Moon Bay	18.31	31.77	24.96	29.28	30.62	16.64	NA
Newark	9.01	16.33	13.17	14.86	19.54	8.25	14.35
Palo Alto	9.18	19.32	13.59	18.81	23.40	8.73	14.17
San Mateo	12.64	22.84	16.96	22.40	25.97	11.39	20.77

NA = Not available

Table 4-5. SFWD Suburban District Water Deliveries, 1970-1971 Fiscal Year, by Class of Customer

Suburban Demand Distribution in Ccf  
(hundreds of cubic feet)

Class of customer	Quantity (Ccf)	Percent	Year end number of active services
Municipal utilities	47,243,000	71	55
Investor owned utilities	15,668,000	24	20
Regular metered rates	2,671,000	4	522
Municipal non-paying	948,000	1	36
Total	66,530,000	100	633

Actual demand in the suburban service area in fiscal year 1970-1971, by class of customer, has been shown in Table 4-5. The California Water Service Company accounts for 24 percent of the total suburban usage, through its 20 active services in eight San Mateo County communities.

Because of Raker Act restrictions, the total quantity of water sold to investor owned utilities is limited to that quantity

obtained from sources other than Hetch Hetchy. In fiscal year 1971, sources other than Hetch Hetchy provided approximately 25 percent of the water utilized in the entire system, while sales to investor owned utilities accounted for 14 percent of the total system deliveries.

The distribution of re-sale demand by individual community is shown in Table 4-6.

Forecasts of Future Deliveries. The forecasts of future deliveries through fiscal year 1976-1977, which are shown in Fig. 4-2 and Table 4-2, are the totals of the forecasts projected for each individual community or class of customer.

Table 4-6. Water Sold in Suburban Area for Re-Sale, Fiscal Year 1970-1971, by Utility or Water District (Ccf)

Utility or District	Hundreds of cubic feet (Ccf)	Utility or District	Hundreds of cubic feet (Ccf)
<u>San Mateo County</u>		<u>Alameda County</u>	
Municipal Utilities & Water Districts		Municipal Utilities & Water Districts	
City of Redwood City	4,293,000	Hayward Municipal Water System	6,760,000
City of Burlingame	2,342,000	Alameda County Water District	2,008,000
Belmont County Water District	1,794,000		
Menlo Park Municipal Water Department	1,732,000	Alameda County total	8,768,000
City of Millbrae	1,465,000		
Northcoast C.W.D.	1,348,000	Total water sold for resale purposes	62,911,000
Town of Hillsborough	1,339,000		
City of San Bruno	1,290,000		
City of Daly City	1,157,000		
East Palo Alto Water District	1,022,000		
Estero Municipal Improvement (Foster City)	692,000		
Coastside County Water District	292,000		
Westborough County Water District	249,000		
Dimond Public Utilities District	174,000		
City of Brisbane	148,000		
Guadalupe Valley Municipal Improvement District	115,000		
Skyline County Water District	31,000		
Palomar Park County Water District	20,000		
Los Trancos County Water District	17,000		
Cordilleras Mutual Water Association	3,000		
San Francisco International Airport	766,000		
Investor Owned Utilities (California Water Service Co.)			
San Mateo	5,791,000		
South San Francisco	3,130,000		
San Carlos	2,037,000		
Menlo Park	1,936,000		
Bear Gulch District	1,440,000		
Woodside	678,000		
Colma (Broadmoor)	352,000		
Redwood City	304,000		
San Mateo County total	35,957,000		
<u>Santa Clara County</u>			
Municipal Utilities & Water Districts			
City of Palo Alto	7,926,000		
City of Sunnyvale	4,255,000		
City of Mountain View	3,293,000		
City of Milpitas	2,196,000		
Purissima Hills County Water District	448,000		
City of San Jose (Alviso)	68,000		
Santa Clara County total	18,186,000		

Tables 4-7 and 4-8 indicate the forecasted deliveries for each individual suburban re-sale customer, in thousands of cubic feet.

Table 4-9 indicates the forecasted suburban deliveries by class of customer, in Mcf.

Table 4-10 indicates the forecasted San Francisco deliveries by class of customer, in Mcf.

Table 4-11 indicates the total forecasted SFWD system deliveries by service area and by class of customer, in Mcf.

Table 4.7. Actual and Forecasted Water Deliveries (Thousands of Cu. Ft.),  
Municipal Utilities and Water Districts

Municipal utilities	Fiscal Year											
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
<b>San Mateo County</b>												
Redwood City	331,515	328,054	369,963	375,890	409,215	429,291	450,000	471,000	492,000	513,000	534,000	555,000
Burlingame	138,533	142,255	139,458	163,462	170,955	179,453	187,000	195,000	206,000	216,000	229,000	242,000
Marina C. W. D.	119,243	129,642	127,742	159,669	175,720	173,706	184,000	195,000	206,000	217,000	229,000	242,000
Marina Park Mun. W. D.	112,243	127,371	141,337	135,884	175,720	146,497	151,000	156,000	161,000	166,000	171,000	176,000
Millbrae	130,238	134,871	139,750	138,269	130,923	134,808	139,000	143,000	147,000	151,000	155,000	159,000
Northeast GWD	121,613	119,171	135,591	129,606	142,103	133,900	136,000	138,000	140,000	142,000	144,000	146,000
Hillsborough	113,900	109,690	106,333	119,024	137,228	129,017	134,000	139,000	144,000	149,000	154,000	159,000
San Bruno	40,925	62,895	96,864	91,106	122,631	115,745	130,000	144,000	158,000	172,000	186,000	200,000
Daly City	92,258	90,239	97,753	98,627	106,683	102,216	105,000	108,000	111,000	114,000	117,000	120,000
E. Palo Alto W. D.	15,484	27,474	37,433	47,031	64,936	69,176	78,000	87,000	96,000	105,000	114,000	123,000
Foster City	11,636	12,306	13,858	14,574	26,036	29,259	32,000	35,000	38,000	41,000	44,000	47,000
Coastalide C. W. D.	1,620	14,659	18,376	17,673	22,890	24,866	27,000	29,000	31,000	33,000	35,000	37,000
Westborough C. W. D.	14,261	14,475	15,701	16,797	17,669	17,428	18,000	19,000	20,000	21,000	22,000	23,000
Diamond P. U. D.	11,826	12,368	12,269	12,568	13,506	14,792	16,000	17,000	18,000	19,000	20,000	21,000
Brisbane	3,869	4,550	6,165	9,848	10,821	11,514	13,000	15,000	17,000	19,000	21,000	23,000
Guadalupe Valley	2,772	1,053	1,824	2,476	3,827	3,081	4,000	4,000	5,000	5,000	6,000	6,000
Skyline C. W. D.	2,772	1,053	1,824	2,476	3,827	3,081	4,000	4,000	5,000	5,000	6,000	6,000
Alameda Park C. W. D.	2,772	1,053	1,824	2,476	3,827	3,081	4,000	4,000	5,000	5,000	6,000	6,000
Los Gatos C. W. D.	761	200	1,780	1,739	2,304	1,713	2,000	3,000	3,000	4,000	4,000	4,000
Codilleras	374	336	369	1,390	2,345	1,332	1,000	1,000	1,000	1,000	1,000	1,000
S.F. Intl. Airport	56,568	57,571	68,090	77,472	82,814	76,581	82,000	88,000	94,000	100,000	106,000	112,000
<b>Total</b>	1,532,033	1,605,778	1,787,204	1,827,421	2,028,942	2,029,008	2,128,000	2,229,000	2,330,000	2,431,000	2,532,000	2,632,000
<b>Santa Clara County</b>												
Palo Alto	656,337	652,775	731,125	738,521	800,651	792,605	819,000	845,000	871,000	897,000	923,000	949,000
Sunnyvale	336,000	404,893	462,409	489,695	562,791	425,490	450,000	475,000	500,000	525,000	564,000	589,000
Mountain View	291,798	233,816	245,638	260,031	327,203	328,274	350,000	371,000	392,000	413,000	434,000	455,000
Milpitas	140,701	159,678	184,523	197,653	222,566	219,278	236,000	253,000	270,000	287,000	304,000	321,000
Purissima Hills C. W. D.	30,629	31,058	33,403	38,098	47,191	47,000	47,000	50,000	53,000	56,000	59,000	62,000
San Jose (Alviso)	0	0	0	0	2,600	6,764	9,000	11,000	13,000	15,000	0	0
<b>Total</b>	1,365,665	1,482,220	1,657,098	1,723,999	1,963,002	1,918,471	1,911,000	2,005,000	2,099,000	2,193,000	2,284,000	2,376,000
<b>Alameda County</b>												
Hayward Mun. W. S.	524,289	545,695	583,042	613,103	661,529	675,986	709,000	742,000	775,000	808,000	841,000	874,000
Alameda C. W. D.	94,198	247,091	185,830	154,831	171,996	200,819	224,000	243,000	263,000	283,000	306,000	329,000
<b>Total</b>	618,487	792,786	768,872	767,936	833,525	876,805	933,000	985,000	1,038,000	1,091,000	1,147,000	1,203,000
<b>Grand total</b>	9,516,185	3,880,784	4,213,174	4,319,356	4,825,469	4,724,234	4,972,000	5,219,000	5,467,000	5,715,000	5,963,000	6,211,000

Table 4.8. Actual and Forecasted Water Deliveries (Thousands of Cu. Ft.), Investor Owned Utilities

Investor owned utilities	Fiscal year											
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
<b>San Mateo County</b>												
San Mateo	530,790	537,940	577,170	571,510	586,060	579,170	587,000	595,000	603,000	611,000	619,000	627,000
San Francisco	283,430	296,840	313,880	309,260	317,450	312,970	317,000	321,000	325,000	329,000	333,000	337,000
South San Francisco	170,390	167,110	189,570	195,870	216,010	203,700	212,000	220,000	228,000	236,000	244,000	252,000
San Carlos	221,120	181,830	204,600	192,770	224,980	193,570	200,000	206,000	212,000	218,000	224,000	230,000
Menlo Park	115,450	120,160	145,010	130,550	129,050	143,990	146,000	148,000	150,000	152,000	154,000	156,000
Bear Gulch District	75,880	71,940	70,430	61,690	77,390	67,790	70,000	72,000	74,000	76,000	78,000	80,000
Woodside	28,190	28,560	29,060	29,470	33,470	35,190	36,000	37,000	38,000	39,000	40,000	41,000
Colma (Broadmoor)												
Redwood City	31,650	23,660	27,860	30,290	38,470	30,400	32,000	34,000	36,000	38,000	40,000	42,000
<b>Total</b>	<b>1,456,900</b>	<b>1,428,040</b>	<b>1,557,600</b>	<b>1,521,410</b>	<b>1,622,880</b>	<b>1,566,780</b>	<b>1,600,000</b>	<b>1,633,000</b>	<b>1,666,000</b>	<b>1,699,000</b>	<b>1,732,000</b>	<b>1,765,000</b>



**Table 4-9. Actual and Forecasted Deliveries of Water in M.C.F., Suburban Service Areas, by Class of Customer**

Class of customer	Fiscal year											
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Municipal resale accounts												
San Mateo County	1532.03	1605.78	1787.20	1827.42	2028.94	2029.01	2128.00	2229.00	2330.00	2431.00	2532.00	2632.00
San Clara County	1365.67	1482.22	1637.10	1724.00	1963.00	1818.47	1911.00	2005.00	2099.00	2193.00	2284.00	2376.00
Alameda County	618.49	792.78	768.87	767.94	833.53	876.80	933.00	985.00	1038.00	1091.00	1147.00	1203.00
Investor owned accounts												
San Mateo County	1456.91	1428.04	1557.61	1521.39	1622.86	1566.78	1600.00	1633.00	1666.00	1699.00	1732.00	1765.00
Municipal non-paying accounts												
Water Dept., airport, etc.	110.00	89.70	108.70	108.20	101.30	94.80	94.30	94.70	94.10	93.50	92.90	92.30
Regular metered accounts												
Moffett Field and all others	189.50	191.30	209.80	235.40	270.40	267.10	287.30	307.50	327.70	347.90	368.10	388.30
Total (M.C.F.)	5272.60	5589.82	6089.28	6184.35	6820.03	6652.96	6953.60	7254.20	7554.80	7855.40	8156.00	8456.60

**Table 4-10. Actual and Forecasted Deliveries of Water in M.C.F., City of San Francisco, by Class of Customer**

Class of customer	Fiscal year											
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Residential	1609.1	1598.6	1643.9	1684.7	1758.9	1764.5	1770.0	1776.0	1782.0	1788.0	1794.0	1800.0
Commercial	2273.7	2019.1	2148.3	2293.2	2327.2	2340.5	2353.0	2366.0	2379.0	2392.0	2405.0	2418.0
Industrial	*	354.4	313.7	303.3	289.7	276.5	263.0	250.0	237.0	224.0	211.0	198.0
Docks and shipping	35.9	38.4	37.9	39.6	38.4	32.2	33.0	34.0	35.0	36.0	37.0	38.0
Municipal paying	31.1	32.5	35.2	36.8	36.1	36.2	37.0	37.0	37.0	37.0	37.0	37.0
Municipal non-paying	310.3	309.5	323.0	331.4	363.0	368.6	373.0	378.0	383.0	388.0	393.0	398.0
Total (M.C.F.)	4260.1	4352.5	4502.0	4689.0	4813.3	4818.5	4829.0	4841.0	4853.0	4865.0	4877.0	4889.0

\* Industrial consumption combined with commercial in 1965-1966.



Table 4-11. Delivery of Water in M.C.F., by SFWD System Service Area and by Class of Customer

Service area	Fiscal year													
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77		
<u>North of Crystal Springs</u>														
San Francisco	4,260	4,353	4,502	4,689	4,813	4,819	4,829	4,841	4,853	4,865	4,877	4,889		
Suburban resale	1,689	1,774	1,915	1,937	2,096	2,065	2,133	2,203	2,273	2,343	2,413	2,483		
Suburban regular metered	47	42	44	44	52	51	53	55	57	59	61	63		
Muni non-pay	53	42	51	51	46	46	45	45	43	45	45	44		
Suburban total	1,789	1,858	2,010	2,032	2,196	2,162	2,231	2,303	2,375	2,447	2,519	2,590		
Total	6,049	6,211	6,512	6,721	7,009	6,981	7,060	7,144	7,228	7,312	7,396	7,479		
<u>East of Crystal Springs</u>														
Suburban resale	3,284	3,535	3,856	3,905	4,352	4,225	4,439	4,649	4,860	5,071	5,282	5,493		
Suburban regular metered	143	149	166	191	218	216	234	252	270	288	306	324		
Muni non-pay	57	47	57	56	54	50	50	50	50	49	49	49		
Total	3,484	3,731	4,079	4,152	4,624	4,491	4,723	4,951	5,180	5,408	5,637	5,866		
System total	9,533	9,942	10,591	10,873	11,633	11,472	11,783	12,095	12,408	12,720	13,033	13,345		

## CHAPTER 5

INVESTMENT IN UTILITY PLANT AND  
CAPITAL IMPROVEMENT PROGRAM

The original cost of the SFWD utility plant in service as of June 30, 1971 was \$188,122,942. The detail, by specific account, was shown in Chapter 3.

The entire cost of all facilities purchased from the Spring Valley Water Company and all facilities constructed by the Water Department have been funded from operating revenues and there have been no subsidies from tax revenues or the general fund.

Debt Service Expenses

The Water Bond Issues of 1928 (\$41,000,000); 1933 (\$12,095,000); and 1947 (\$12,500,000) have all been fully redeemed.

The total bonded indebtedness of the SFWD, as of June 30, 1971, was solely attributable to their \$48,000,000 (\$3,050,000 unsold) share of the 1961 Municipal Water System Bond Issue. Unredeemed bonds outstanding as of June 30, 1971 totalled \$36,300,000.

Total annual debt-service expense in fiscal year 1970-1971 was \$3,003,000.

The major projects funded by the 1961 Bond Issue were:

- 1) Bay Division Pipeline #4.
- 2) San Antonio Dam and Pipeline.
- 3) Crystal Springs By-pass Aqueduct.
- 4) Crystal Springs to San Andreas Pipeline & Pump Station Additions.
- 5) Crystal Springs Pipeline #3.
- 6) San Antonio and Sunol Pumping Stations.
- 7) Partial funding of Sunol Treatment Plant, San Andreas Treatment Plant, and Crystal Springs Balancing Reservoir and Pumping Station.

Annual debt-service for fiscal years 1965-1966 through 1976-1977 is shown in Table 5-1. The additional debt service to be incurred, as a result of the final two issues in January, 1972 and January, 1973 is shown at the end of this chapter in Table 5-5.

**Table 5-1. SFWD Annual Bond Interest and Redemption (Fiscal Years 1965-1966 through 1976-1977)**

Fiscal year	Bond interest				Bond redemption				Combined total
	1928 series	1947 series	1961 series	Total	1928 series	1947 series	1961 series	Total	
1965-66	225,000	24,000	1,139,000	1,388,000	1,000,000	225,000	982,000	2,207,000	3,595,000
1966-67	180,000	15,000	909,000	1,104,000	1,000,000	133,000	799,000	1,932,000	3,036,000
1967-68	135,000	8,000	1,112,000	1,255,000	1,000,000	133,000	1,546,000	2,679,000	3,934,000
1968-69	90,000	1,000	1,177,000	1,268,000	1,000,000	92,000	1,632,000	2,724,000	3,992,000
1969-70	45,000		1,247,000	1,292,000	1,000,000		1,752,000	2,752,000	4,044,000
1970-71			1,203,000	1,203,000			1,800,000	1,800,000	3,003,000
1971-72			1,260,000	1,260,000			2,109,000	2,109,000	3,369,000
1972-73			1,186,000	1,186,000			2,451,000	2,451,000	3,637,000
1973-74			1,092,000	1,092,000			2,565,000	2,565,000	3,657,000
1974-75			993,000	993,000			2,565,000	2,565,000	3,558,000
1975-76			896,000	896,000			2,565,000	2,565,000	3,461,000
1976-77			808,000	808,000			2,568,000	2,568,000	3,376,000

### Capital Expenditures Funded from Revenues

In the previous six fiscal years, 1965-1966 through 1970-1971, capital expenditures totalling \$24,425,000 were funded from operating revenues, as indicated in Table 5-2, which averaged \$4,071,000 per year.

**Table 5-2. Capital Expenditures Funded from Operating Revenues (Fiscal Years 1965-1966 through 1970-1971)**

Description	Fiscal year						Total
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	
Reconstruction and replacements	2,341,000	1,544,000	1,961,000	2,081,000	3,296,000	2,092,000	13,315,000
Additions and betterments	661,000	996,000	1,076,000	5,465,000	980,000	1,088,000	10,266,000
Equipment	173,000	128,000	89,000	142,000	154,000	158,000	844,000
<b>Total</b>	<b>3,175,000</b>	<b>2,668,000</b>	<b>3,126,000</b>	<b>7,688,000</b>	<b>4,430,000</b>	<b>3,338,000</b>	<b>24,425,000</b>

These funds were expended as follows:

Description	Amount
Reconstruction and Replacements (Recurring Projects)	\$ 11,775,000
Additions and Betterments (Recurring Projects)	5,432,000
San Andreas Treatment Plant	3,725,000
Equipment	844,000
Reconstruct Market Street Mains and Services	565,000
Rehabilitate Bay Division Pipelines #1 & #2	320,000
Total of all Other Projects	1,764,000
<b>Total</b>	<b>\$ 24,425,000</b>

In addition, the total excess of revenues over expenditures of \$3,373,000 in fiscal year 1970-1971 was also encumbered, to fund additional capital requirements.

Recurring Reconstruction and Replacement Projects include the following:

Replacement of substandard water services.  
Relocation and realignment of mains and services.  
Replacement of water mains.  
Miscellaneous minor reconstruction and replacement.

Recurring Additions and Betterments consist of the following projects:

Normal main extensions.  
New services and meters.  
New gate valves and appurtenances.  
Minor additions and betterments.

### Capital Improvement Program

The explosive suburban growth and other developments of the past decade have created extensive new requirements for the upgrading and modernization of the existing city and suburban storage and distribution systems. In addition,

**Table 5-3. SFWD Capital Improvement Program (Fiscal Years 1971-1972 through 1976-1977)**

Description	Fiscal year					Total
	1971-72	1972-73	1973-74	1974-75	1975-76	
<b>Continuing improvement programs and minor specific projects</b>						
Reconstruction and replacements	2,492,000	2,690,000	2,949,000	3,692,000	2,943,000	2,993,000
Additions and betterments	914,000	910,000	1,667,000	1,519,000	1,386,000	1,456,000
<b>Major Specific Projects</b>						
Calaveras Dam rehabilitation		2,000,000				2,000,000
Balboa Reservoir South			4,800,000			4,800,000
Balboa pumping plant				1,200,000		1,200,000
Crystal Springs pumping plant		800,000				800,000
Bay Div. regulating reservoir and pumping plant	6,775,000					6,775,000
Central control system		450,000			800,000	1,250,000
Sunol filtration plant enlargement		5,000,000				5,000,000
Dumbarton pipe bridge rehabilitation	200,000		600,000			800,000
San Andreas pipeline #3			6,075,000			6,075,000
Bay Div. pipeline pumping plants				4,300,000		4,300,000
Crystal Springs pipeline #3				3,350,000		3,350,000
Suburban headquarters				2,560,000		2,560,000
Continuing program: Feeder mains	1,186,000	350,000		400,000		1,936,000
Balboa feeder mains			300,000	2,300,000		2,600,000
Univ. Mound feeder mains					1,000,000	1,000,000
Sunset feeder mains					180,000	180,000
Cement lining of mains:						
CS#1					600,000	600,000
SA#1			320,000			320,000
Irvington					290,000	290,000
SA#2					700,000	700,000
<b>Total Major Specific Projects</b>	<b>8,161,000</b>	<b>8,600,000</b>	<b>12,095,000</b>	<b>13,710,000</b>	<b>2,980,000</b>	<b>2,740,000</b>
<b>Grand Total</b>	<b>11,567,000</b>	<b>12,200,000</b>	<b>16,711,000</b>	<b>18,921,000</b>	<b>7,309,000</b>	<b>7,189,000</b>

considerable expansion of existing facilities will be required to meet forecasted demand during the coming decade. These requirements were detailed in a report entitled "An Analysis of Water Demand, Supply and System Improvements", prepared for SFWD in 1969 by Daniel, Mann, Johnson & Mendenhall/Malcolm Pirnie Engineers.

As a result of that report and with modifications by more recent engineering studies, a six-year capital improvement program was developed by SFWD, extending from fiscal year 1971-1972 through 1976-1977, and is detailed in Table 5-3.

In addition, the primary beneficiary of each project, (suburban, city or joint), is also indicated in Table 5-4. After allocation of the joint expenses, approximately 36 percent of the total cost of the capital improvement program is assignable to suburban customers, as shown in Table 8-11.

**Table 5-4. SFWD Capital Improvement Program Expenditures by Beneficiary (dollars), Fiscal Years 1971-1972 through 1976-1977**

Project description	Capital expenditures, by beneficiary			
	Suburban	City	Joint	Total
Reconstruction and replacements	1,460,000	14,812,000	1,487,000	17,759,000
Additions and betterments	345,000	4,784,000	2,723,000	7,852,000
Calaveras Dam rehabilitation	0	0	2,000,000	2,000,000
Balboa reservoir south	0	4,800,000	0	4,800,000
Balboa pumping plant	0	1,200,000	0	1,200,000
Crystal Springs pumping plant	0	0	800,000	800,000
Bay Div. regulating reservoir and pumping plant	6,775,000	0	0	6,775,000
Central control system	0	450,000	800,000	1,250,000
Sunol filtration plant enlargement	0	0	5,000,000	5,000,000
Dumbarton pipe bridge rehabilitation	0	0	800,000	800,000
San Andreas pipeline No. 3	0	0	6,075,000	6,075,000
Bay Div. pipeline pumping plants	4,300,000	0	0	4,300,000
Crystal Springs pipeline No. 3	0	0	3,350,000	3,350,000
Suburban headquarters	0	0	2,960,000	2,960,000
Continuing program: Feeder Mains	0	1,536,000	0	1,536,000
Balboa feeder mains	0	3,350,000	0	3,350,000
Univ. Mound feeder mains	0	1,000,000	0	1,000,000
Sunset feeder mains	0	1,180,000	0	1,180,000
Cement lining of mains: CS #1	0	0	600,000	600,000
Cement lining of mains: SA #1	0	0	320,000	320,000
Cement lining of mains: Irvington	0	0	290,000	290,000
Cement lining of mains: SA #2	0	0	700,000	700,000
<b>Total</b>	<b>12,880,000</b>	<b>33,112,000</b>	<b>27,905,000</b>	<b>73,897,000</b>

The average cost of the required capital expenditures will exceed \$12,000,000 annually, over this six year period. This will substantially increase the annual revenue requirements of the SFWD during that period of time and will necessitate a further rate-increase, as well as a major bond issue.

**Table 5-5. Estimated Annual Bond Interest and Redemption for Remaining Issues of 1961 Series Bonds**

Fiscal year	January, 1972 Issue (\$ 2,195,000)	January, 1973 Issue (\$ 855,000)	Total
<u>Bond Redemption</u>			
1971-1972	0	0	0
1972-1973	110,000	0	110,000
1973-1974	110,000	43,000	153,000
1974-1975	110,000	43,000	153,000
1975-1976	110,000	43,000	153,000
1976-1977	110,000	43,000	153,000
<u>Bond Interest</u>			
1971-1972	0	0	0
1972-1973	126,000	0	126,000
1973-1974	120,000	49,000	169,000
1974-1975	114,000	47,000	161,000
1975-1976	107,000	44,000	151,000
1976-1977	101,000	42,000	143,000

# CHAPTER 6

## OPERATING REVENUES

The three sources of revenue available to the SFWD are: (1) Regular metered sales within the city, (2) Sales to suburban resale customers under long-term contracts, plus a small number of suburban regular metered sales, and (3) Miscellaneous income not derived from the sale of water.

Receipts from these sources were studied for the six year period ending June 30, 1971, to determine trends in the individual accounts. Actual recorded revenues for fiscal years 1965-1966 through 1970-1971 are shown in Table 6-1. The underlying trend is somewhat obscured by a large property sale in 1968-1969 and the change in rates in 1969-1970

**Table 6-1. SFWD Operating Revenues, Fiscal Years 1965-1966 through 1970-1971**

Sources of revenue	Fiscal year					
	1965-66	1966-67	1967-68	1968-69 <sup>a</sup>	1969-70 <sup>b</sup>	1970-71 <sup>b</sup>
Sale of water - city	11,043,000	11,386,000	11,745,000	12,077,000	12,540,000	14,225,000
Sale of water - suburban	8,401,000	8,925,000	9,643,000	9,831,000	10,927,000	12,134,000
Municipal non-paying	(1,225,000)	(1,185,000)	(1,244,000)	(1,258,000)	(1,313,000)	(1,494,000)
Miscellaneous income	1,022,000	1,435,000	1,079,000	3,579,000	1,654,000	1,456,000
<b>Total</b>	<b>19,241,000</b>	<b>20,561,000</b>	<b>21,223,000</b>	<b>24,229,000</b>	<b>23,808,000</b>	<b>26,321,000</b>

<sup>a</sup> Includes sale of land totalling \$2,012,000

<sup>b</sup> Includes 15 percent rate increase effective June 1, 1970

Appropriate adjustments were therefore made in recorded years 1968-1969, 1969-1970 and 1970-1971, to eliminate the effect of the land sale and of the 15 percent rate-increase which became effective on June 1, 1970. The adjusted revenues are shown in Table 6-2, and are indicative of the trend without the prior rate adjustment.

**Table 6-2. Adjusted SFWD Operating Revenues, Fiscal Years 1965-1966 through 1970-1971**

Sources of revenue	Fiscal year					
	1965-66	1966-67	1967-68	1968-69 <sup>a</sup>	1969-70 <sup>b</sup>	1970-71 <sup>b</sup>
Sale of water - city	11,043,000	11,386,000	11,745,000	12,077,000	12,184,000	12,370,000
Sale of water - suburban	8,401,000	8,925,000	9,643,000	9,831,000	10,617,000	10,551,000
Municipal non-paying	(1,225,000)	(1,185,000)	(1,244,000)	(1,258,000)	(1,276,000)	(1,299,000)
Miscellaneous income	1,022,000	1,435,000	1,079,000	1,567,000	1,654,000	1,456,000
<b>Total</b>	<b>19,241,000</b>	<b>20,561,000</b>	<b>21,223,000</b>	<b>22,217,000</b>	<b>23,179,000</b>	<b>23,078,000</b>

<sup>a</sup> Excludes \$2,012,000 for sale of land from miscellaneous income

<sup>b</sup> Excludes 15 percent rate increase effective June 1, 1970

Regular Metered Sales Within the City

Table 6-3 indicates the operating revenues derived from water sales within the city, by major customer class.

**Table 6-3. Regular Metered Sales Within the City, Fiscal Years 1965-1966 through 1970-1971**

Class of customer	Fiscal year					
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
Residential	4,931,000	4,979,000	5,104,000	5,212,000	5,419,000	6,140,000
Commercial	4,330,000	4,609,000	4,850,000	5,088,000	5,297,000	6,041,000
Industrial	567,000	575,000	535,000	503,000	492,000	534,000
Other	196,000	206,000	218,000	225,000	219,000	233,000
Sub-total	10,024,000	10,369,000	10,707,000	11,028,000	11,427,000	12,948,000
Municipal non-paying	1,019,000	1,017,000	1,038,000	1,049,000	1,113,000	1,277,000
Total	11,043,000	11,386,000	11,745,000	12,077,000	12,540,000	14,225,000

Water sales to Builders and Contractors, to Docks and Shipping accounts, and to the Municipal Paying accounts were combined and are shown under "Other" sales.

Since a single rate schedule (W-1) is applicable to all classes of customers within the city of San Francisco, some ambiguity has been permitted to develop in the classification of accounts.

Revenues from water sales are taken into income when billed. All residential accounts and the smaller commercial accounts are billed bi-monthly, while all other accounts are billed on a monthly basis.

The municipal non-paying accounts located within San Francisco, as of June 30, 1971, consisted of 1,217 active services primarily required for:

- Fire Protection
- Public Works
- Recreation and Parks
- Public Buildings and Facilities

Revenues earned from the municipal non-paying accounts located within the city are shown separately in Table 6-3, although the funds are not actually collected by the SFWD. These revenues, plus the amounts shown in Table 6-4 for the municipal non-paying accounts located outside of the city of San Francisco, totalled \$1,494,000 in fiscal year 1970-1971.

An offsetting municipal in lieu tax expense of the same amount is normally included under administrative and general expenses, in compliance with the Charter of the City and County of San Francisco.



Table 6-4. Water Sales to Suburban Customers, Fiscal Years 1965-1966 through 1970-1971

Class of customer	Fiscal year					
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
Municipal utilities, for re-sale	5,537,000	6,122,000	6,599,000	6,790,000	7,648,000	8,529,000
Investor owned utilities, for re-sale	2,304,000	2,275,000	2,453,000	2,407,000	2,588,000	2,841,000
Regular metered accounts	354,000	360,000	385,000	425,000	491,000	547,000
Sub-total	8,195,000	8,757,000	9,437,000	9,622,000	10,727,000	11,917,000
Municipal non-paying	206,000	168,000	206,000	209,000	200,000	217,000
Total suburban	8,401,000	8,925,000	9,643,000	9,831,000	10,927,000	12,134,000

#### Water Sales to Suburban Customers

Table 6-4 indicates the operating revenues derived from water sales to the major classes of suburban customers, including municipal non-paying accounts.

The actual number of active services for each class of customer, as of June 30, 1971, was indicated in Table 4-5. The individual communities or facilities served by the municipal and investor owned re-sale customers were listed in Table 4-6.

The regular metered accounts include Moffett Field and Agnew State Hospital, but are primarily small, individual customers in Alameda, Santa Clara and San Mateo Counties.

Rate Schedule W-25 is applicable to re-sale customers with long-term contracts, while rate Schedule W-21 is applicable to suburban regular metered customers.

The municipal non-paying accounts located outside of San Francisco, as of June 30, 1971, consisted of 36 active services, including San Francisco International Airport (non-re-sale consumption), the County Jail, and Hassler Health Farm.

#### Miscellaneous Income

Table 6-5 indicates the revenues derived by SFWD from sources or activities other than the sale of water.

These sources normally include income from the lease of SFWD land, including sale of crops; interest earned; and overhead charged on work done for other city functions. This last item recovers (and is intended to offset) those applicable administrative and general expenses which are incurred in the performance of capital construction and non-departmental work.

Table 6-5. Miscellaneous Income, Fiscal Years 1965-1966 through 1970-1971

Other income	Fiscal Year					
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
Rents including share-crops	445,000	451,000	501,000	738,000	712,000	622,000
Interest revenues	130,000	153,000	146,000	175,000	191,000	152,000
Fixed asset sales	47,000	323,000	36,000	2,012,000	12,000	15,000
Payroll <sup>a</sup>	444,000	490,000	384,000	577,000	733,000	706,000
All other	39,000	86,000	118,000	161,000	54,000	37,000
<b>Total - Gross</b>	<b>1,105,000</b>	<b>1,503,000</b>	<b>1,185,000</b>	<b>3,663,000</b>	<b>1,702,000</b>	<b>1,532,000</b>
Rent and crop expense	(83,000)	(68,000)	(106,000)	(84,000)	(48,000)	(76,000)
<b>Total - Net</b>	<b>1,022,000</b>	<b>1,435,000</b>	<b>1,079,000</b>	<b>3,579,000</b>	<b>1,654,000</b>	<b>1,456,000</b>

<sup>a</sup> Debits represent payroll expense of gardeners and shop foremen. Credits represent payroll overhead on labor charged to capital construction and non-departmental work.

In addition, in fiscal year 1968-1969, \$2,012,000 was realized by SFWD as a result of the sale of land to the state of California. At that time, the proceeds were made available to SFWD to fund part of the Capital Improvement Program.

However, \$3,250,000 received from the state of California in fiscal year 1969-1970 was utilized by the P.U.C. for non-SFWD purposes.

#### Projected Revenues Through Fiscal Year 1976-1977

Projected usage by class of customer was indicated in Tables 4-9 and 4-10, for fiscal years 1971-1972 through 1976-1977. On the basis of these deliveries, the anticipated future revenues at present rates were determined by class of customer, and are indicated in Table 6-6.

Table 6-6. Projected Revenues, Fiscal Years 1971-1972 through 1976-1977, Based on Present Rates

Source of revenue	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Sale of water - City	14,270,000	14,322,000	14,371,000	14,422,000	14,472,000	14,521,000
Sale of water - Suburban	12,682,000	13,230,000	13,778,000	14,326,000	14,874,000	15,420,000
Sale of water - Total	26,952,000	27,552,000	28,149,000	28,748,000	29,346,000	29,941,000
Miscellaneous income	1,583,000	1,710,000	1,837,000	1,964,000	2,091,000	2,218,000
<b>Total revenue</b>	<b>28,535,000</b>	<b>29,262,000</b>	<b>29,986,000</b>	<b>30,712,000</b>	<b>31,437,000</b>	<b>32,159,000</b>

In addition, the anticipated future revenues that would result if a composite 17.4 percent rate-increase was implemented on 1-1-73 are shown in Table 6-7.

**Table 6-7. Projected Revenues, Fiscal Years 1971-1972 through 1976-1977, with Proposed Rate Increase on 1-1-73**

Source of revenue	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Sale of water - City	14,270,000	15,360,000	16,455,000	16,513,000	16,570,000	16,627,000
Sale of water - Suburban	12,682,000	14,586,000	16,602,000	17,263,000	17,923,000	18,581,000
Sale of water - Total	26,952,000	29,946,000	33,057,000	33,776,000	34,493,000	35,208,000
Miscellaneous income	1,583,000	1,710,000	1,837,000	1,964,000	2,091,000	2,218,000
Total revenue	28,535,000	31,656,000	34,894,000	35,740,000	36,584,000	37,426,000

## CHAPTER 7

### OPERATING REVENUE DEDUCTIONS

The operating revenue deductions of the SFWD consist of operating and maintenance expenses, property and in lieu taxes, annual assessments from the Hetch Hetchy Department, debt service expenses and capital expenditures.

Operating and maintenance expenses of the SFWD include source of supply, pumping, purification, transmission and distribution, customer accounts, and administrative and general expenses.

All operating and maintenance cost records are maintained by individual operating division (e.g. City, Peninsula and Alameda), as well as in total, for each expense account.

Taxes levied against SFWD properties located in San Mateo, Santa Clara and Alameda Counties and in lieu taxes levied by San Francisco are treated as separate revenue deductions, and are not included in the operating and maintenance expenses.

The annual assessment from Hetch Hetchy is also treated as a separate revenue deduction, and is not included with other source-of-supply expenses.

The annual debt service expenses were previously discussed in Chapter 5, and are shown in Tables 5-1 and 5-5 for the existing bond issues.

The capital expenditures funded from revenues were also discussed in Chapter 5, and are shown in Table 5-2.

#### Recorded Operating and Maintenance Expenses for Fiscal Years 1965-1966 through 1970-1971

Total recorded, actual operating and maintenance expenses for fiscal years 1965-1966 through 1970-1971, for each of the major expense accounts and for each of the principal sub-accounts, have been tabulated and are discussed below.

The SFWD system of accounts substantially conforms to that prescribed by the Public Utilities Commission of the State of California for Class A water utilities, except where otherwise noted.

Source of Supply. Source of supply expenses are shown in Table 7-1, by eleven individual sub-accounts. Source of supply expenses include all operating and maintenance costs, (incurred in the Peninsula and Alameda Divisions, primarily), which are attributable to the collecting and impounding reservoirs or to the other facilities appurtenant to the source of supply system.

Table 7-1. SFWD Operating and Maintenance Expenses (Source of Supply, Pumping, and Purification Expenses)

Description	No.	Fiscal year					
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71
<b>Source of supply</b>							
Operation, supervision and engineering	701	65,723	70,742	80,277	110,013	116,084	131,741
Operation, labor and expenses	702	570,265	725,543	545,526	497,876	535,674	571,759
Miscellaneous expenses	703	1,452	958	1,352	978	905	898
Maintenance, supervision and engineering	704-706	9,774	328	2	235	324	(156)
Maintenance of structures and improvements	707	236,707	195,045	102,507	106,464	74,802	80,838
Maintenance of collecting and impounding reservoirs	708	100,425	126,693	197,494	276,320	261,145	328,910
Maintenance of lakes, rivers and other intakes	709	407	363	1,918	6,560	1,556	459
Maintenance of springs and tunnels	710	446	0	0	1,798	3,823	1,542
Maintenance of wells	711	527	1,169	4,243	1,767	408	5,596
Maintenance of supply mains	712	72,753	75,652	69,332	100,234	78,892	111,413
Maintenance of other source of supply plant	713	13,905	4,998	2,329	1,462	1,226	31
Total		1,072,384	1,201,491	1,004,980	1,103,707	1,074,839	1,233,031
<b>Pumping expenses</b>							
Pumping labor and expenses	724	91,531	103,014	137,691	140,986	146,797	161,661
Miscellaneous supplies and expenses	725	1,042	255	512	853	2,421	2,180
Fuel or power purchased for pumping	726	261,828	291,246	305,591	294,152	314,408	315,191
Maintenance, supervision and engineering	729	0	0	0	10	195	0
Maintenance of structures and improvements	730	8,241	18,841	10,882	17,421	16,960	10,772
Maintenance of primary pumping equipment	731	3,814	2,569	28	1,012	15,753	444
Maintenance of pumping equipment	732	26,553	35,823	15,041	19,363	16,038	63,980
Gardening	734	1,797	3,118	5,260	14,506	20,375	13,421
Total		394,806	454,866	475,005	488,303	532,947	567,649
<b>Purification expense accounts</b>							
Operation, supervision and engineering	741	70,848	92,874	88,595	80,209	99,746	122,295
Operation, labor and expenses	742	192,205	256,789	360,534	357,787	394,216	386,311
Miscellaneous expenses	743	130	407	282	25	207	32,969
Supplies and expenses	744	220,573	291,543	267,812	303,612	350,293	294,424
Maintenance, supervision and engineering	745-746	1,288	309	116	0	0	0
Maintenance of structures and improvements	747	6,163	8,746	23,887	29,851	45,879	41,644
Maintenance of water treatment equipment	748	1,215	5,539	33,329	24,746	24,502	20,022
Total		492,422	656,207	774,555	796,230	914,843	897,665

Pumping. Pumping expenses are shown in Table 7-1, by eight individual sub-accounts. Pumping expenses include all operating and maintenance costs, (incurred in the City and Peninsula Divisions, primarily), which are attributable to the operation of pumps and auxiliary equipment.

Purification. Purification expenses are shown in Table 7-1, by seven individual sub-accounts. Purification expenses include all operating and maintenance costs, (incurred in the Peninsula and Alameda Divisions, primarily), which are attributable to water treatment functions.

Water treatment costs will increase substantially when the San Andreas Water Filtration Plant becomes operational.

Transmission and Distribution. Transmission and distribution expenses are shown in Table 7-2, by sixteen individual sub-accounts. These expenses, (incurred primarily in the City Division), include all operating and maintenance costs attributable to the storage and distribution reservoirs and to the appurtenant mains and services.

Customers' Accounts. Customers' accounts expenses are shown in Table 7-2, by six individual sub-accounts. These expenses, (incurred primarily in the City Division), include all meter reading, customer record keeping and collection costs.

Administrative and General. General and administrative expenses are shown in Table 7-3, by twenty-four individual sub-accounts. These expenses include administrative salaries, general engineering expenses, employee pensions and social security expenses, SFWD share of electronic data processing and Public Utilities Commission costs, and other miscellaneous overhead costs.

The annual grand totals of the operating and maintenance expenses for fiscal years 1965-1966 through 1970-1971 are shown in Table 7-3. In fiscal year 1970-1971, operating and maintenance expenses accounted for 43 percent of the total expenditures of the SFWD.

#### Property Taxes for Fiscal Years 1965-1966 through 1970-1971

Total annual taxes levied against SFWD properties located outside of San Francisco are shown in Table 7-4, for fiscal years 1965-1966 through 1970-1971.

The bulk of the taxes are paid to San Mateo and Alameda Counties, with the balance to Santa Clara County and miscellaneous other governmental entities.

Property tax payments reached a peak in fiscal year 1968-1969.

Table 7-2. SFWD Operating and Maintenance Expenses (Transmission and Distribution, and Customer Account Expenses)

Description	No.	Fiscal year					
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71
<u>Transmission and distribution accounts</u>							
Operation, supervision and engineering	751	167,425	169,799	193,103	241,739	237,234	265,117
Storage facilities expenses	752	14,475	13,140	36,188	19,558	16,765	49,453
Transmission and distribution lines expenses	753	229,201	210,524	197,542	195,351	236,368	215,832
Meter expenses	754	245,360	282,812	311,593	332,475	342,100	338,188
Customer installation expenses	755	315,223	345,404	356,528	381,401	394,957	425,676
Miscellaneous	756	11,787	12,114	17,279	9,447	18,526	71,589
Operation expense - City yard	757	190,589	204,239	319,158	321,600	293,497	314,243
Maintenance, supervision and engineering	758	4,771	4,891	4,850	5,100	5,100	20,497
Maintenance of structures and improvements	759	84,353	89,499	115,537	142,003	129,357	151,547
Maintenance of reservoirs and tanks	760	19,273	10,696	6,294	31,246	88,649	107,174
Maintenance of transmission lines and canals	761	56,075	40,401	98,122	179,923	143,955	164,804
Maintenance of services	763	542,699	645,903	749,099	777,496	888,911	860,501
Maintenance of miscellaneous plant	766	26,140	27,885	30,821	52,263	86,534	124,397
Maintenance of distribution mains, canals, etc.	767	651,983	752,405	873,163	994,383	1,018,155	1,015,282
Reconditioning of salvaged materials	768	0	0	0	2,093	3,696	0
Recoverable claimsmains and services	769	0	0	0	0	7,850	42,896
Total		2,559,354	2,809,712	3,309,277	3,686,078	3,911,654	4,167,196
<u>Customers' accounts expenses</u>							
Meter reading expenses	772	109,979	111,959	123,614	132,218	130,259	136,228
Customer records and collection expenses	773	147,413	167,652	154,815	151,576	178,008	207,434
Miscellaneous customer accounts expenses	774	163,123	206,170	179,443	183,628	201,842	182,601
Inspection and service	775	132,993	146,108	201,198	225,978	200,179	212,671
Bookkeeping department	776	198,427	140,772	179,191	195,089	190,835	223,760
Shipping	777	29,071	30,320	35,475	31,216	19,026	6,409
Total		781,006	802,981	873,736	919,705	920,149	969,103



Table 7-3. SFWD Operating and Maintenance Expenses (Administrative and General Expenses)

Description	No.	Fiscal year					
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71
<u>Administrative and general</u>							
Salaries-general officers	780	33,285	48,456	41,293	44,863	42,152	42,371
Salaries-general office	781	127,752	132,656	159,376	205,175	208,661	221,506
General engineering	782	220,684	291,010	555,381	369,991	381,582	427,082
Resources and planning	783	34,547	42,189	49,415	45,713	37,895	38,681
Office supplies and other expenses	784	36,355	31,205	33,972	31,967	33,717	28,987
Telephone service	785	55,663	67,396	64,454	82,134	82,853	84,049
Mason Street operating expenses	786	132,319	83,923	82,808	89,676	90,064	95,869
Outside services employed	788	0	20	0	166	2,010	394
Insurance-Compensation	789	116,038	64,998	86,583	96,502	59,901	45,680
Insurance-other	790	10,373	12,290	13,473	14,129	15,293	19,272
Injuries and damages	791	40,208	23,608	30,288	27,407	23,137	27,095
Pensions	792	191,956	298,593	283,086	300,216	652,354	676,714
Social Security	793	117,061	159,427	168,470	203,882	205,930	218,171
Electronic data processing	794	173,739	252,527	256,035	269,816	358,234	204,413
P. U. C.	798	129,813	144,296	174,733	182,493	301,701	349,104
Maintenance to telephone system	805	39,272	27,145	13,781	4,631	9,237	7,828
Maintenance to Mason St. building	807	8,801	29,989	30,300	34,083	20,213	20,097
Maintenance to radio system	808	3,364	3,354	5,404	9,458	9,231	12,173
Inventory expense-maintenance	809	(12,348)	(5,010)	(2,989)	9,733	14,010	(760)
Maintenance of non-operative property	810	2,469	4,138	3,386	448	516	1,830
Miscellaneous maintenance	806-811-812	158,391	158,981	104,424	194,640	181,092	157,277
<u>Miscellaneous expenses</u>							
Uncollectible water bills	814	16,564	20,331	20,332	20,581	22,703	31,299
Provision for contingent funds	815	10,423	14,012	26,132	27,413	28,929	23,676
Undistributed operating expenses	817	5,623	12,019	3,156	10,112	12,305	46,774
Total		1,652,352	1,917,553	2,203,293	2,275,229	2,793,720	2,779,582
Grand total		6,952,324	7,842,810	8,640,846	9,269,252	10,148,152	10,614,226



**Table 7-4. Taxes Levied Against SFWD Properties, Fiscal Years 1965-1966 through 1970-1971**

Description	Fiscal year					
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
San Mateo County Taxes	499,000	552,000	557,000	894,000	587,000	644,000
Alameda County Taxes	425,000	448,000	434,000	554,000	572,000	634,000
Santa Clara County Taxes	78,000	87,000	99,000	111,000	156,000	190,000
Other-Miscellaneous	0	0	35,000	0	10,000	24,000
<b>Total</b>	<b>1,002,000</b>	<b>1,087,000</b>	<b>1,125,000</b>	<b>1,559,000</b>	<b>1,325,000</b>	<b>1,492,000</b>

However, because of a Federal easement placed on Peninsula watershed lands there was a reduction in certain assessed valuations, resulting in a \$ 300,000 tax reduction in San Mateo County in 1969-1970.

In fiscal year 1970-1971, property taxes accounted for 6 percent of the total expenditures of the SFWD.

Projected annual property taxes through fiscal year 1976-1977 are shown in Table 7-5.

**Table 7-5. Estimated Taxes to be Levied Against SFWD Properties, Fiscal Years 1971-1972 through 1976-1977**

Description	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
San Mateo County Taxes	690,000	720,000	760,000	800,000	840,000	880,000
Alameda County Taxes	670,000	710,000	750,000	790,000	830,000	875,000
Santa Clara County Taxes	215,000	240,000	260,000	275,000	290,000	300,000
Other - Miscellaneous	16,000	19,000	18,000	21,000	24,000	27,000
<b>Total</b>	<b>1,591,000</b>	<b>1,689,000</b>	<b>1,788,000</b>	<b>1,885,000</b>	<b>1,984,000</b>	<b>2,082,000</b>

#### Annual Assessments from Hetch Hetchy

The annual assessments from Hetch Hetchy for fiscal years 1965-1966 through 1970-1971 were shown in Table 7-6 of the January, 1972 report, as were the projected annual assessments through fiscal year 1976-1977.

In fiscal year 1970-1971, the Hetch Hetchy assessment accounted for 18 percent of the total expenditures of the SFWD.

#### Debt Service Expenses

The annual bond interest and redemption costs for fiscal years 1965-1966 through 1976-1977 were shown in Tables 5-1 and 5-5. In fiscal year 1970-1971, the debt service expenses accounted for 12 percent of the total expenditures of the SFWD.

Capital Expenditures Funded from Revenues

The annual capital expenditures funded from revenues, for fiscal years 1965-1966 through 1970-1971, were shown in Table 5-2. In fiscal year 1970-1971, capital expenditures accounted for 21 percent of the total expenditures of the SFWD.

Projections of Future Revenue Deductions Through 1976-1977

In order to determine total future revenue requirements of the SFWD through fiscal year 1976-1977, each of the annual revenue deductions were projected through that period of time, on the basis of the relevant influencing and escalation factors.

Operating and Maintenance Expenses. Each operating and maintenance expense account was correlated with the appropriate characteristics of the SFWD system, (e.g. total metered delivery; City metered delivery; etc.), and the future operating and maintenance expenses were then determined on the basis of the projected consumptions shown in Chapter 4, or other relevant criteria.

The project operating and maintenance expenses through fiscal year 1976-1977, by major account, are shown in Table 7-6.

Projected Source of Supply Expenses. In the past, source of supply expenses have been closely correlated with the quantity of water delivered. This expense has therefore been projected through fiscal year 1976-77, as indicated in Table 7-6, in accordance with the anticipated increases in maintenance costs and the increase in volume shown in Chapter 4.

Projected Pumping Expenses. Pumping expenses have been escalated in accordance with anticipated increases in volume and in costs, (e.g. purchased power and labor), on the basis of current operations.

In addition, anticipated pumping expenses have also been incorporated for the following new facilities, as shown in Table 5-3:

Bay Division Regulating Reservoir and Pumping Plant  
Crystal Springs Pumping Plant Additions  
Bay Division Pipeline Pumping Plant  
Balboa Pumping Plant

The total projected pumping expenses are indicated in Table 7-6.

Projected Purification Expenses. Purification expenses have been escalated in accordance with anticipated increases in volume and in costs, on the basis of current operations.

In addition, anticipated treatment expenses have also been incorporated for the new San Andreas filtration plant. The total projected purification expenses are indicated in Table 7-6.



Projected Transmission and Distribution Expenses. Transmission and distribution expenses have been escalated in accordance with anticipated increases in labor costs and with system aging, on the basis of current operations.

In addition, anticipated increases in operating and maintenance costs have also been incorporated for the following new facilities, as shown in Table 5-3:

Bay Division Regulating Reservoir and Pumping Plant  
Central Control System  
Balboa Reservoir  
San Andreas Pipeline No. 3  
Crystal Springs Pipeline No. 3

The total projected transmission and distribution expenses are indicated in Table 7-6.

Projected Customers' Accounts Expenses. Customers' accounts expenses have been projected through fiscal year 1976-77, as indicated in Table 7-6, in accordance with anticipated increases in labor and other costs, on the basis of current operations.

Projected General and Administrative Expenses. General and administrative expenses have been escalated in accordance with anticipated increases in salaries, engineering activity and other overhead costs.

In the past, total general and administrative expense has been closely correlated with the total of all other operating and maintenance expense. The projected expenses indicated in Table 7-6 maintain this correlation.

Property Taxes. The estimated taxes to be levied against SFWD properties for fiscal years 1971-1972 through 1976-1977 are shown in Table 7-5. In the aggregate, property taxes are expected to increase at the approximate rate of 5 percent per year.

Annual Assessments from Hetch Hetchy. The estimated annual assessments from Hetch Hetchy through fiscal year 1976-1977 are shown in Table 7-6, and the derivations of these assessments are detailed in Chapter 7 of the January, 1972 report.

Debt Service Expenses. The annual debt service expenses through fiscal year 1976-1977, which are attributable to the 1961 bond issues, are shown in Tables 5-1 and 5-5.

The annual debt service expenses attributable to the proposed new bond issue are developed in Chapter 10 and are shown in Tables 10-3 and 10-4.

Capital Expenditures to be Funded from Revenues. The annual capital expenditures through fiscal year 1976-1977, which are to be funded from operating revenues, are also developed in Chapter 10 and shown in Tables 10-2 and 10-3.

In Lieu Taxes. In the past, the in lieu taxes were equal to the Municipal Non-Paying Revenues, as shown in Table 6-1. The future in lieu taxes, projected on the same basis, are shown in Table 10-7.

## CHAPTER 8

ALLOCATION OF JOINT COSTS BETWEEN  
CITY AND SUBURBAN SERVICE AREAS

The expenditures of the SFWD, for which equitable allocation procedures between the city and suburban customers were developed, consist of operating and maintenance expenses; property taxes and in lieu tax; annual assessments from Hetch Hetchy; debt service expenses; and capital expenditures funded from revenues.

In addition, annual cost-recovery factors were also developed, as described in Chapter 9, that will permit SFWD to include in the suburban rates an equitable share of the system construction costs which the suburban customers have not yet paid.

Allocation Principles and Procedures

The following general procedure was used in allocating costs between the city and suburban customers:

(1) First, the specific costs were isolated, those that are directly assignable to either the city or suburban customers.

(2) Then the remaining "Joint" costs were allocated equitably between the two functions, in proportion to the relative benefits that will accrue to each function.

**Table 8-1. Allocation Factors for Current Expenditures (Average for Fiscal Years 1971-1972 through 1976-1977)**

Description	Allocation factor		Basis for allocation
	City	Suburban	
<u>Operation and Maintenance Expenses</u>			
Source of supply	Varies	Varies	Table 18-2
Pumping expenses	Varies	Varies	Table 18-4
Purification expenses	Varies	Varies	Table 18-2
Transmission and distribution	Varies	Varies	Table 18-5
Customers' accounts	0.937	0.063	Table 18-6
Administrative and general	Varies	Varies	Table 18-7
Property Taxes	Varies	Varies	Table 18-2
Hetch Hetchy Assessment	Varies	Varies	Table 18-2
Debt Service	0.482	0.518	Table 18-10
Capital Expenditures	0.639	0.361	Table 18-11
In lieu Tax	Varies	Varies	Table 18-7

Wherever it appeared reasonable to do so, joint costs were allocated on the basis of proportional usage as measured by quantity of annual delivery, since that is an easily determinable and equitable indicator of the relative benefit being derived from a shared facility.

In those instances where such proportional use did not appear to be a proper or equitable basis for allocating joint costs the alternate method which was used instead has been specifically noted.

Table 8-1 summarizes all of the expenditures which were allocated between the city and suburban customers, shows the allocation factors which were utilized, and indicates the basis for establishing those allocation factors.

#### Development of Proportionate Use Factors

Proportionate use factors were established on the basis of average projected deliveries during fiscal years 1971-1972 through 1976-1977, as developed from the usage data in Table 4-11.

The various allocation factors by year and by service area, which were utilized in this study, are shown in Table 8-2 (on the following page).

**Table 8-3. Joint Cost Allocation Factors Based on Proportionate Use, by Service Area**

Service area	Percent of projected deliveries, fiscal years 1972 through 1977
San Francisco	38.7
Suburban	
North of Crystal Springs	19.2
East of Crystal Springs	42.1
Sub-total	61.3
Total	100.0
North of Crystal Springs only	
San Francisco	66.8
Suburban	33.2
Total	100.0

In Table 8-3, the six year average cost-allocation factors are shown by service area and by geographic region, based on the total projected deliveries during fiscal years 1971-1972 through 1976-1977, inclusive.

#### Allocation of Operating and Maintenance Expenses

The projected operating and maintenance expenses were allocated between city and suburban customers on the basis of either proportionate usage or relative benefits, as appropriate.

#### Projected Source of Supply Expenses.

All source of supply expenses were allocated on the basis of proportionate usage as shown in Table 8-2. The actual deliveries in Mcf per year, were indicated in Table 4-11. The actual cost allocations, in dollars, are summarized in Tables 8-8 and 8-9.

Projected Pumping Expenses. Pumping expenses were allocated on the basis of relative benefits, as shown in Table 8-4.

Table 8.2. Joint Cost Allocation Factors Based on Proportionate Use, by Year and by Service Area

Service area	Fiscal year														
	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77			
Proportionate usage, in percent															
San Francisco	44.7	43.8	42.5	43.1	41.4	42.0	41.0	40.0	39.1	38.3	37.4	36.6			
Suburban; North of Crystal Springs	18.8	18.7	19.0	18.7	18.9	18.8	18.9	19.1	19.1	19.2	19.3	19.4			
Suburban; East of Crystal Springs	36.5	37.5	38.5	38.2	39.7	39.2	40.1	40.9	41.8	42.5	43.3	44.0			
Total suburban	55.3	56.2	57.5	56.9	58.6	58.0	59.0	60.0	60.9	61.7	62.6	63.4			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Proportionate usage, north of Crystal Springs only, in percent															
San Francisco	70.4	70.1	69.1	69.7	68.7	69.1	68.4	67.7	67.2	66.6	66.0	65.4			
Suburban; North of Crystal Springs	29.6	29.9	30.9	30.3	31.3	30.9	31.6	32.3	32.8	33.4	34.0	34.6			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			



Table 8-4. Allocation of Pumping Expense (On Basis Other Than Proportionate Use)

Account	Expense, by location in which incurred, fiscal year 1970-1971		
	City	Suburban	Total
Pumping labor and expenses	93,703	67,958	161,661
Miscellaneous supplies and expenses	908	1,272	2,180
Fuel or power purchased for pumping	187,020	128,171	315,191
Maintenance, supervision and engineering	0	0	0
Maintenance of structures and improvements	5,752	5,020	10,772
Maintenance of primary pumping equipment	304	140	444
Maintenance of pumping equipment	37,548	26,432	63,980
Gardening	7,037	6,384	13,421
<b>Total</b>	<b>332,272</b>	<b>235,377</b>	<b>567,649</b>
Allocation of joint costs:			
Incurred by suburban divisions	91,091	(91,091)	0
Incurred by city division	0	0	0
<b>Adjusted total</b>	<b>423,363</b>	<b>144,286</b>	<b>567,649</b>
<b>1970-1971 allocation factor</b>	<b>0.746</b>	<b>0.254</b>	<b>1.000</b>
Projected allocation factors, based on capital improvement program per Table 5-3:			
1971 - 1972	0.746	0.254	1.000
1972 - 1973	0.746	0.254	1.000
1973 - 1974	0.621	0.379	1.000
1974 - 1975	0.581	0.419	1.000
1975 - 1976	0.542	0.458	1.000
1976 - 1977	0.537	0.463	1.000

The allocation factors for fiscal year 1970-1971 were first developed on the basis of the locations in which they were incurred, (e.g. city division vs. suburban divisions), as obtained from the SFWD cost ledger. They were then adjusted as shown in Table 8-4 to correct inequities, (e.g. a portion of the suburban pumping costs were incurred for the benefit of the city customers).

In addition, the allocation factors were recomputed for each fiscal year through 1976-1977, in accordance with the addition of the new pumping facilities to the SFWD system, as described in Chapter 7 under "Projected Pumping Expenses". The actual cost-allocations, in dollars, are summarized in Tables 8-8 and 8-9.

**Projected Purification Expenses.** All purification expenses were allocated on the basis of proportionate usage, as shown in Table 8-2. The actual cost allocations, in dollars, are summarized in Tables 8-8 and 8-9.

**Projected Transmission and Distribution Expenses.** All transmission and distribution expenses were allocated on the basis of relative benefits, as shown in Table 8-5.

**Table 8-5. Allocation of Transmission and Distribution Expense  
(On Basis Other Than Proportionate Use)**

Account	Expense, by location in which incurred, fiscal year 1970-1971		
	City	Suburban	Total
Operation, supervision and engineering	265,117	0	265,117
Storage facilities expenses	31,822	17,631	49,453
Transmission and distribution lines expenses	193,995	21,837	215,832
Meter expenses	303,056	35,132	338,188
Customer installations expenses	425,676	0	425,676
Miscellaneous expenses	69,129	2,460	71,589
Operation expense - City yard	247,455	66,788	314,243
Maintenance, supervision and engineering	5,350	15,147	20,497
Maintenance of structures and improvements	135,626	15,921	151,547
Maintenance of reservoirs and tanks	80,963	26,211	107,174
Maintenance of transmission lines and canals	12,369	152,435	164,804
Maintenance of services	785,971	74,530	860,501
Maintenance of miscellaneous plant	75,176	49,221	124,397
Maintenance of distribution mains, canals, etc.	1,013,803	1,479	1,015,282
Recoverable claims - mains and services	42,142	754	42,896
<b>Total</b>	<b>3,687,650</b>	<b>479,546</b>	<b>4,167,196</b>
Allocation of joint costs:			
Incurred by suburban divisions	142,000	(142,000)	0
Incurred by city division	(408,000)	408,000	0
<b>Adjusted total</b>	<b>3,421,650</b>	<b>745,546</b>	<b>4,167,196</b>
<b>1970-1971 allocation factor</b>	<b>0.821</b>	<b>0.179</b>	<b>1.000</b>
Projected allocation factors based on capital improvement program per Table 5-3:			
1971 - 1972	0.821	0.179	1.000
1972 - 1973	0.821	0.179	1.000
1973 - 1974	0.806	0.194	1.000
1974 - 1975	0.806	0.194	1.000
1975 - 1976	0.804	0.196	1.000
1976 - 1977	0.804	0.196	1.000

The allocation factors for fiscal year 1970-1971 were first developed on the basis of the locations in which they were incurred. They were then adjusted as shown in Table 8-5 to correct inequities.

The allocation factors were then recomputed for each fiscal year through 1976-77, in accordance with the addition of the new transmission and distribution facilities as described in Chapter 7 under "Projected Transmission and Distribution Expenses". The actual cost-allocations, in dollars, are summarized in Tables 8-8 and 8-9.

**Projected Customers' Accounts Expenses.** All customers' accounts expenses were allocated on the basis of relative benefits, as shown in Table 8-6.

The allocation factors for fiscal year 1970-1971 were first developed on the basis of the locations in which they were incurred. They were then adjusted as shown in Table 8-6 to correct inequities.

**Table 8-6. Allocation of Customers' Accounts Expense  
(On Basis Other Than Proportionate Use)**

Account	Expense, by location in which incurred, fiscal year 1970-1971		
	City	Suburban	Total
Meter Reading Expenses	118,382	17,846	136,228
Customer records and collection expenses	207,434	0	207,434
Miscellaneous customer accounts expenses	182,601	0	182,601
Inspection and service	212,671	0	212,671
Bookkeeping department	223,760	0	223,760
Shipping	6,409	0	6,409
<b>Total</b>	<b>951,257</b>	<b>17,846</b>	<b>969,103</b>
Allocation of joint costs:			
Incurred by suburban divisions	0	0	0
Incurred by city division	(43,000)	43,000	0
<b>Adjusted total</b>	<b>908,257</b>	<b>60,846</b>	<b>969,103</b>
<b>1970-1971 allocation factor</b>	<b>0.937</b>	<b>0.063</b>	<b>1.000</b>
Projected allocation factors based on capital improvement program per Table 5-3:			
1971 - 1972	0.937	0.063	1.000
1972 - 1973	0.937	0.063	1.000
1973 - 1974	0.937	0.063	1.000
1974 - 1975	0.937	0.063	1.000
1975 - 1976	0.937	0.063	1.000
1976 - 1977	0.937	0.063	1.000

The same allocation factors were utilized for each fiscal year through 1976-77, as the relative number of accounts is not expected to change significantly during those years. The actual cost-allocations, in dollars, are summarized in Tables 8-8 and 8-9.

**Projected General and Administrative Expenses.** All general and administrative expenses were allocated on the same basis as the composite of all other operating and maintenance expenses, as shown in Table 8-7.

The composite of all other operating and maintenance expense allocations for each fiscal year through 1976-77 was obtained from Tables 8-8 and 8-9. The resulting cost-allocations are also shown in Tables 8-8 and 8-9.

#### **Allocation of Property Taxes**

The projected property taxes to be paid to San Mateo, Santa Clara and Alameda Counties were allocated on the basis of proportionate use, as shown in Table 8-2. The actual cost-allocations, in dollars, are summarized at the end of this chapter in Table 8-12.

#### **Allocation of In Lieu Taxes**

The in lieu taxes were allocated on the same basis as the General and Administrative Expenses, as shown in Table 8-7.

**Table 8-7. Allocation Factors for General and Administrative Expenses  
(Based on Composite of All Other Operating and Maintenance  
Expense Allocations)**

	1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor
Composite operating and maintenance expense	6,088,000	0.708	6,389,000	0.703	6,720,000	0.683	7,089,000	0.675	7,462,000	0.667	7,898,000	0.662
Allocated to City	2,515,000	0.292	2,696,000	0.297	3,115,000	0.317	3,409,000	0.325	3,724,000	0.333	4,033,000	0.338
Allocated to Suburban												
Total	8,603,000	1.000	9,085,000	1.000	9,835,000	1.000	10,498,000	1.000	11,186,000	1.000	11,931,000	1.000

Table 8-8. Annual Cost Allocations to City Customers, Operating and Maintenance Expenses, Fiscal Years 1971-1972 through 1976-1977

Description	1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense
<b>Operating and Maintenance Expenses</b>												
Source of supply	0.410	510,000	0.400	514,000	0.391	518,000	0.383	522,000	0.374	525,000	0.366	528,000
Pumping expenses	0.746	443,000	0.746	463,000	0.621	483,000	0.581	549,000	0.542	572,000	0.537	669,000
Purification expenses	0.410	531,000	0.400	570,000	0.391	609,000	0.383	650,000	0.374	689,000	0.366	729,000
Transmission and distribution	0.821	3,681,000	0.821	3,903,000	0.806	4,156,000	0.806	4,398,000	0.804	4,691,000	0.804	4,971,000
Customers' accounts	0.937	923,000	0.937	939,000	0.937	954,000	0.937	970,000	0.937	985,000	0.937	1,001,000
<b>Sub-total</b>	0.708	6,088,000	0.703	6,389,000	0.683	6,720,000	0.675	7,089,000	0.667	7,462,000	0.662	7,898,000
<b>General and administrative</b>	0.708	2,254,000	0.703	2,427,000	0.683	2,550,000	0.675	2,719,000	0.667	2,891,000	0.662	3,082,000
<b>Total</b>	0.708	8,342,000	0.703	8,816,000	0.683	9,270,000	0.675	9,808,000	0.667	10,353,000	0.662	10,980,000

Table 8-9. Annual Cost Allocations to Suburban Customers, Operating and Maintenance Expenses, Fiscal Years 1971-1972 through 1976-1977

Description	1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense
<b>Operating and Maintenance Expenses</b>												
Source of supply	0.590	735,000	0.609	771,000	0.609	807,000	0.617	842,000	0.626	879,000	0.634	915,000
Pumping expenses	0.254	151,000	0.254	157,000	0.379	295,000	0.419	396,000	0.458	484,000	0.463	577,000
Purification expenses	0.590	764,000	0.600	854,000	0.609	949,000	0.617	1,048,000	0.626	1,152,000	0.634	1,262,000
Transmission and distribution	0.179	803,000	0.179	851,000	0.194	1,000,000	0.194	1,058,000	0.196	1,143,000	0.196	1,212,000
Customers' accounts	0.063	62,000	0.063	63,000	0.063	64,000	0.063	65,000	0.063	66,000	0.063	67,000
<b>Sub-total</b>	0.292	2,515,000	0.297	2,696,000	0.317	3,115,000	0.325	3,409,000	0.333	3,724,000	0.338	4,033,000
<b>General and administrative</b>	0.292	929,000	0.297	1,025,000	0.317	1,184,000	0.325	1,309,000	0.333	1,444,000	0.338	1,574,000
<b>Total</b>	0.292	3,444,000	0.297	3,721,000	0.317	4,299,000	0.325	4,718,000	0.333	5,168,000	0.338	5,607,000

Allocation of Hetch Hetchy Assessment

The projected Hetch Hetchy assessments were also allocated on the basis of proportionate use, as shown in Table 8-2.

The actual cost-allocations, in dollars, are summarized at the end of this chapter in Table 8-12.

Allocation of Debt Service for 1961 Bond Issue

The projected bond interest and bond redemption payments for the 1961 bond issue were allocated on the basis of relative benefits, as shown in Table 8-10.

Table 8-10. Allocation of Debt Service for 1961 Bond Issue

Description	Total amount appropriated	Allocation factor		Basis
		City	Suburban	
Bay Division Pipeline No. 4	16,400,000	0.387	0.613	Table 18-3
San Antonio Dam	9,161,000	0.387	0.613	Table 18-3
Crystal Springs Bypass	8,936,000	0.668	0.332	Table 18-3
Crystal Springs to San Andreas Pipeline	2,700,000	0.668	0.332	Table 18-3
Crystal Springs Pipeline No. 3	3,100,000	0.668	0.332	Table 18-3
Balboa Reservoir	0	-	-	-
San Andreas Filtration Plant	3,250,000	0.387	0.613	Table 18-3
Engineering, supervision and other	5,553,000	0.482	0.518	Composite of above
Total	49,100,000	0.482	0.518	Composite of above

The cost of each of the projects funded by this bond issue was first allocated between the city and suburban beneficiaries on the basis of proportionate use. The composite of all project allocations was then utilized for the purpose of allocating the annual debt-service costs.

The actual cost-allocations, in dollars, are summarized at the end of this chapter in Table 8-12.

Allocation of Capital Expenditures Funded from Revenues

The projected capital expenditures which must be funded from revenues, (including debt service costs for the proposed new bond issue), were allocated on the basis of relative benefits, as shown on Table 8-11.

The cost of each of the projects included in the SFWD capital improvement program, as described in Table 5-3, was first allocated between the city and suburban beneficiaries on the basis of proportionate use. The composite of all project allocations, as shown in Table 8-11, can then be utilized for the purpose of allocating the annual capital costs.

The actual cost allocations, in dollars, are summarized in Table 8-12. (The projected total annual capital costs are developed in Chapter 10).





**Table 8-12. Allocation of Property and In Lieu Taxes, Hetch Hetchy Assessment, Debt Service and Capital Expenditures Between City and Suburban Customers**

	1971-1972		1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense	Factor	Expense
<b>Property taxes</b>												
Allocated to City	0.410	652,000	0.400	676,000	0.391	699,000	0.383	722,000	0.374	742,000	0.366	762,000
Allocated to Suburban	0.590	939,000	0.600	1,013,000	0.609	1,089,000	0.617	1,164,000	0.626	1,242,000	0.634	1,320,000
<b>Total</b>	1.000	1,591,000	1.000	1,689,000	1.000	1,788,000	1.000	1,886,000	1.000	1,984,000	1.000	2,082,000
<b>Hetch Hetchy Assessment</b>												
Allocated to City	0.410	2,050,000	0.400	2,250,000	0.391	2,581,000	0.383	2,503,000	0.374	2,419,000	0.366	2,345,000
Allocated to Suburban	0.590	2,950,000	0.600	3,375,000	0.609	4,021,000	0.617	4,031,000	0.626	4,049,000	0.634	4,061,000
<b>Total</b>	1.000	5,000,000	1.000	5,625,000	1.000	6,602,000	1.000	6,534,000	1.000	6,468,000	1.000	6,406,000
<b>Bond Interest (1961 Issue)</b>												
Allocated to City	0.482	607,000	0.482	632,000	0.482	608,000	0.482	556,000	0.482	505,000	0.482	459,000
Allocated to Suburban	0.518	633,000	0.518	680,000	0.518	653,000	0.518	596,000	0.518	542,000	0.518	493,000
<b>Total</b>	1.000	1,260,000	1.000	1,312,000	1.000	1,261,000	1.000	1,154,000	1.000	1,047,000	1.000	951,000
<b>Bond Redemption (1961 Issue)</b>												
Allocated to City	0.482	1,017,000	0.482	1,234,000	0.482	1,310,000	0.482	1,310,000	0.482	1,310,000	0.482	1,312,000
Allocated to Suburban	0.518	1,092,000	0.518	1,327,000	0.518	1,408,000	0.518	1,408,000	0.518	1,408,000	0.518	1,409,000
<b>Total</b>	1.000	2,109,000	1.000	2,561,000	1.000	2,718,000	1.000	2,718,000	1.000	2,718,000	1.000	2,721,000
<b>Capital Expenditures (new)</b>												
Allocated to City	0.639	3,375,000	0.639	4,019,000	0.639	4,588,000	0.639	4,555,000	0.639	4,494,000	0.639	4,376,000
Allocated to Suburban	0.361	1,906,000	0.361	2,271,000	0.361	2,592,000	0.361	2,573,000	0.361	2,539,000	0.361	2,472,000
<b>Total</b>	1.000	5,281,000	1.000	6,290,000	1.000	7,180,000	1.000	7,128,000	1.000	7,033,000	1.000	6,848,000
<b>In-Lieu Tax</b>												
Allocated to City	0.708	1,068,000	0.703	1,154,000	0.683	1,213,000	0.675	1,211,000	0.667	1,209,000	0.662	1,212,000
Allocated to Suburban	0.292	440,000	0.297	488,000	0.317	563,000	0.325	583,000	0.333	604,000	0.338	619,000
<b>Total</b>	1.000	1,508,000	1.000	1,642,000	1.000	1,776,000	1.000	1,794,000	1.000	1,813,000	1.000	1,831,000



## CHAPTER 9

## CONSTRUCTION COST RECOVERY FROM SUBURBAN USERS

In addition to allocating a fair share of the current annual project expenditures to the suburban customers, it is also necessary to provide for repayment of project construction costs, to permit SFWD to recover an equitable share of the past construction costs which the suburban customers have not yet paid.

Repayment of Expenditures for Construction

On the basis of proportional use, the equitable suburban share of the past construction costs associated with the water portion of the Hetch Hetchy project which must still be repaid by the suburban customers totals \$ 38,823,000 as indicated in Table 9-1.

**Table 9-1. Required Annual Repayment from Suburban Customers to Equitability Apportion Construction Costs, dollars**

Description	Total suburban obligation	Contributed thru 6-30-71	Balance due	Required annual repayment <sup>a</sup>
Hetch Hetchy debt service, 1909 - 1930	10,455,000	0	10,455,000	568,000
SFWD direct contributions to Hetch Hetchy, 1931 through 1971	62,602,000	42,946,000	19,656,000	1,068,000
SFWD contributions to Hetch Hetchy via General Fund, 1931 through 1946	11,217,000	2,505,000	8,712,000	473,000
<b>Sub-total</b>	<b>84,274,000</b>	<b>45,451,000</b>	<b>38,823,000</b>	<b>2,109,000</b>
SFWD debt service, 1930 through 1971	44,609,000	39,133,000	5,476,000	298,000
<b>Total due</b>	<b>128,883,000</b>	<b>84,584,000</b>	<b>44,299,000</b>	<b>2,407,000</b>

<sup>a</sup> Based on a capital recovery factor of 0.05434

In addition, \$ 5,476,000 must still be repaid by the suburban customers to reimburse SFWD for past Water Department construction costs.

As developed hereinafter, it would be appropriate to provide for amortizing the total outstanding balance over a period of 40 years at 4.5 percent interest. On this basis, the annual cost recovery factor is 0.05434 and the annual contribution to SFWD for this purpose by the suburban customers is \$ 2,407,000.

### Necessity for Hetch Hetchy Construction Cost Recovery

In the first decade of Hetch Hetchy's water operations, between 1935 and 1944, San Francisco received 87 percent of the total water delivered throughout the SFWD system, while the suburban customers received only 13 percent.

However, during the past 16 years, explosive growth has occurred in the suburban areas served by SFWD.

While city usage increased by one third from 1954 to 1970, suburban usage nearly quadrupled during those 16 years, as indicated in Table 9-2, and suburban customers now receive almost 60 percent of the total system deliveries.

**Table 9-2. Comparison of City vs. Suburban Deliveries, Fiscal Years 1953-1954 and 1969-1970, in MGD**

Area	Fiscal year		Ratio of demand
	1953-1954	1969-1970	
City deliveries	73.4	98.9	135%
Suburban deliveries	36.0	140.1	389%

The city and county of San Francisco has incurred substantial recent indebtedness as a result of anticipating and supporting this mushrooming suburban demand on the system. The total investment by San Francisco in the water portion of the Hetch Hetchy system and in the SFWD system now exceeds \$ 336,000,000.

Expansion of Hetch Hetchy system capacity from 215 mgd to 290 mgd was achieved through construction of San Joaquin Valley Pipeline No. 3 (\$ 22,000,000) and purchase of storage space in the new Don Pedro Reservoir (\$ 52,800,000), both financed primarily by the 1961 Water Bond Issue.

These costs would not have been necessary for many years in the future, were it not for the rapidly escalating suburban demand, because of San Francisco's declining population and loss of industrial customers. However, today's San Francisco customers are paying their full share of these system-expansion costs, although the suburban customers will be the primary beneficiaries for the foreseeable future.

Development of both the Hetch Hetchy and SFWD source of supply systems has supported the extensive suburban growth with virtually no capital cost burden to the suburban communities for local storage reservoirs or other local water supply facilities.

Because many suburban resale customers are now peaking directly off of the SFWD system, further additional capital investment will be required by SFWD for balancing reservoirs, pumping plants, and other supporting facilities, imposing still further cost burdens on the San Francisco customers.

However, these same suburban customers who are now making majority use of the Hetch Hetchy water system have not yet contributed an equitable share of the prior system construction costs, in proportion to their current and projected participation.

Suburban water rates must therefore not only recover a proportionate share of the current maintenance, operation and replacement costs of the system, but must also recover an equitable share of the prior expenditures for construction of the system.

#### Hetch Hetchy Project Construction Expenditures Which Must be Recovered

As was indicated in Table 9-1, three categories of prior Hetch Hetchy source of supply costs have been identified as to which the suburban customers heretofore have escaped all or part of their equitable share:

Debt Service, 1909 through 1930. During the 22 years 1909 through 1930, before the existence of SFWD, suburban customers contributed nothing toward the cost of the Hetch Hetchy project. However, as shown in Table 9-3, contributions from the San Francisco general fund exceeded \$ 27.5 million for bond interest and redemption for the Hetch Hetchy system during that period.

**Table 9-3. Net Contributions to Hetch Hetchy from SFWD and from the General Fund, Fiscal Years 1909 through 1946, dollars**

Description	Amount
<u>Contributions from SFWD<sup>a</sup></u>	
Contributions through general fund from SFWD for bond interest and redemption	15,992,457
Contributions from SFWD for bond interest and redemption	2,335,819
Contributions from SFWD for operating expenses	1,980,504
Contributions from SFWD for reconstruction and replacements	149,692
Cost of Newark-San Lorenzo pipeline transferred to SFWD	(1,063,841)
Contributions to SFWD for Sutro Reservoir development	(409,471)
Contributions to SFWD for 1947 Hetch Hetchy water bond fund	(290,517)
<b>Total net contributions from SFWD to Hetch Hetchy</b>	<b>18,694,643</b>
<u>Contributions from General Fund<sup>b</sup></u>	
Contributions from general fund for bond interest and redemption	27,572,452
<b>Total net contributions to Hetch Hetchy</b>	<b>46,267,095</b>

<sup>a</sup> Fiscal years 1931 through 1946

<sup>b</sup> Fiscal years 1909 through 1930

#### SFWD Contributions to Hetch Hetchy via General Fund, 1931 through 1946.

During the years 1931 through 1946, suburban customers contributed a disproportionately small share of the costs of the water portion of the Hetch Hetchy system totaling nearly \$18.7 million which were provided by SFWD via the general fund, as indicated in Table 9-3.

SFWD Direct Contributions to Hetch Hetchy, 1931 through 1971. During the years 1931 through 1971 suburban customers also have contributed a disproportionately small share of the costs of the water portion of the Hetch Hetchy project, in relation to their present and projected demands on the SFWD water supply system. During those years, as shown later in Table 9-6, SFWD contributed \$ 104,337,000 to the water-related expenses of the Hetch Hetchy system. Of this total, San Francisco customers accounted for approximately \$ 61,391,000 while the suburban customers provided only \$ 42,946,000.

### Derivation of Cost-Recovery Factors

For determining the amount of the obligation currently owed to SFWD by the suburban customers because of their having escaped paying part of their equitable share of prior Hetch Hetchy source of supply costs, two basic steps are necessary:

(1) Estimation of the suburban customers' pro-rata share of each category of prior source of supply costs.

(2) Estimation of payments heretofore made by the suburban customers toward fulfillment of their share of each such category of costs.

The remainder represents the amount of the current suburban obligation under each category of prior source of supply costs, and the sum of such remainders constitutes the current total of such obligation.

At the present time, suburban customers already account for approximately 60 percent of the total annual delivery of water. Within the next 20 years, at the current rate of growth, the suburban customers will have received more than 60 percent of the total quantity of water delivered during the existence of SFWD. Over the total anticipated life of the Hetch Hetchy system, they will receive substantially more than 60 percent of all the water delivered. On the basis of these circumstances, it may be conservatively concluded that the suburban share of the Hetch Hetchy water related costs should be 60 percent.

In the case of Hetch Hetchy costs attributable jointly to water supply and power generation, the portion allocable to water supply must, of course, be segregated before the two basic steps described above can be applied.

All payments by SFWD to Hetch Hetchy have been credited to the San Francisco and suburban customers in direct proportion to the benefits they derived from the system, as measured by the relative quantity of water delivered to each group. Each of these two categories of customers therefore has been assigned a pro-rata share of all annual contributions to Hetch Hetchy on the basis of their respective metered deliveries. Table 9-4 shows the comparative annual delivery of water to each of the two classes of customers, for fiscal years 1930-31 through 1970-71. The projected deliveries through 1976-77 also are indicated, as determined from Table 4-2.

In addition, it has been assumed that the payments to Hetch Hetchy from the general fund were allocated between the power system and the water system in direct proportion to the relative investment in utility plant (at original cost) for the two functions, after the joint plant costs have been equitably allocated between those functions. The division applied for that purpose is indicated in Table 9-5.

Table 9-4. Average Daily Metered Delivery (City vs. Suburban), MGD

Fiscal Year	City, mgd	Suburban, mgd	Total, mgd	City, percent	Suburban, percent
1931	40.8	3.3	44.1	93	7
	40.0	3.1	43.1	93	7
	38.6	2.8	41.4	93	7
	39.7	3.3	43.0	92	8
	40.3	3.3	43.6	92	8
	44.4	3.1	47.5	93	7
	46.5	4.2	50.7	92	8
	44.4	6.2	50.6	88	12
	46.7	7.6	54.3	86	14
1940	48.7	8.3	57.0	85	15
	48.7	8.8	57.5	85	15
	51.6	10.2	61.8	83	17
	56.7	11.2	67.9	84	16
	63.1	13.4	76.5	82	18
	69.3	16.3	85.6	81	19
	72.7	18.0	90.7	80	20
	71.4	20.2	91.6	78	22
	70.5	22.0	92.5	76	24
	70.9	24.9	95.8	74	26
1950	68.9	26.0	94.9	73	27
	70.2	28.6	98.8	71	29
	70.3	30.0	100.3	70	30
	72.8	32.6	105.4	69	31
	73.4	36.0	109.4	67	33
	74.3	42.3	116.6	64	36
	74.7	46.3	121.0	62	38
	74.4	48.8	123.2	60	40
	74.9	53.1	128.0	59	41
	78.5	63.6	142.1	55	45
1960	80.7	68.8	149.5	54	46
	79.2	70.0	149.2	54	47
	81.8	78.9	160.7	51	49
	79.1	81.2	160.3	49	51
	82.3	92.9	175.2	47	53
	87.7	98.3	186.0	47	53
	87.6	108.3	195.9	45	55
	89.2	114.6	203.8	44	56
	92.5	125.1	217.6	43	57
	96.3	127.0	223.3	43	57
1970	98.9	140.1	239.0	41	59
	99.0	136.5	235.5	42	58
	99.0	142.5	241.5	41	59
	99.2	148.7	247.9	40	60
	99.4	154.8	254.2	39	61
	99.7	161.0	260.7	38	62
	99.9	167.1	267.0	37	63
	100.2	173.3	273.5	37	63

Table 9-5. Division of Hetch Hetchy Plant Capital (at Original Cost) Between Water Supply and Power Generation, June 30, 1953

Average plant capital	Total	Power	Water	Joint
Water supply	104,743,150	2,299,292	66,709,648	35,734,210
Power supply	13,134,498	11,559,278	417,543	1,157,677
Total	117,877,648	13,858,570	67,127,191	36,891,887
Allocation of joint plant <sup>a</sup>	0	29,513,510	7,378,377	(36,891,887)
Grand total	117,877,648	43,372,080	74,505,568	0
Percent	100.0	36.8	63.2	0

<sup>a</sup> Joint plant allocated 80 percent to power and 20 percent to water, per Wehe report of 8-1-55

The data in Table 9-5 were taken from the Wehe Report of August 1, 1955, and provide the earliest available cost allocation of joint utility plant between water supply and power generation. Prior to that report, all joint plant cost had been arbitrarily allocated 100 percent to water supply.

An amortization period of 40 years for recovery of the unpaid portion of the suburban share of prior costs, as proposed above, is reasonable on the basis of customary long term financing of municipal debt. The proposed interest rate of 4-1/2 percent for liquidation of the obligation represents a reasonable compromise between the currently higher interest rates and the lower interest rates of the past.

The prior expenditures here under consideration have not been escalated to their present value by adding interest over the intervening years, nor has it been proposed to use replacement value of facilities in determining costs to be recovered from the suburban customers. Also, accumulated depreciation of plant has not been taken into account. Under the circumstances which prevail, in which both San Francisco and the suburban customers have shared in the prior benefits of the source of supply system, but in which the suburban customers have exerted rapid increase in proportionate utilization of that system and will continue this trend in the future, it is more suitable to base the cost recovery factors on the dollar amounts of original expenditures.

#### Hetch Hetchy Debt Service, 1909 through 1930

Applying the procedures described above, the required annual suburban contribution to recover an equitable share of the Hetch Hetchy debt service for 1909 through 1930, utilizing information in Tables 9-3 and 9-5, is derived as follows:

- (1) \$ 27,572,452 x 0.632 = \$ 17,426,000  
(Hetch Hetchy debt service allocated to water supply)



- (2)  $0.60 \times \$17,426,000 = \$10,455,000$   
(Suburban share of amount allocated to water)
- (3)  $\$10,455,000 \times 0.05434 = \$568,000$   
(Annual installment to liquidate suburban share)

#### SFWD Contributions to Hetch Hetchy via General Fund, 1931 through 1946

The required annual suburban contribution to recover an equitable share of the payments made by SFWD to Hetch Hetchy via the general fund from 1931 through 1946, based on water delivery ratios, is determined from Tables 9-3 and 9-4, as follows:

- (1)  $\$18,694,643 \times 0.60 = \$11,217,000$   
(Suburban share)
- (2)  $\$18,694,643 \times 0.134 = \$2,505,000$   
(Suburban prior contributions)
- (3)  $\$11,217,000 - \$2,505,000 = \$8,712,000$   
(Suburban share less prior contributions)
- (4)  $\$8,712,000 \times 0.05434 = \$473,000$   
(Annual installment to liquidate unpaid suburban share)

#### SFWD Direct Contributions to Hetch Hetchy, 1931 through 1971

The required annual suburban contribution to recover an equitable share of the assessments paid by SFWD to Hetch Hetchy from 1931 through 1971, is determined from Tables 9-4 and 9-6, as follows:

- (1)  $\$104,337,000 \times 0.60 = \$62,602,000$   
(Suburban share)
- (2)  $\$62,602,000 - \$42,946,000 = \$19,656,000$   
(Suburban share less prior contributions)
- (3)  $\$19,656,000 \times 0.05434 = \$1,068,000$   
(Annual installment to liquidate unpaid suburban share)

#### Annual Assessment for Source of Supply Cost Recovery, Hetch Hetchy System

As indicated in Table 9-1, an annual capital recovery assessment totaling \$2,109,000 would have to be included in determining the annual suburban cost of service, in addition to the suburban share of current costs, in order to provide for recovery of the total outstanding balance of \$38,823,000 remaining in the suburban share of Hetch Hetchy prior costs.

Table 9-6. Annual SFWD Contribution to Hetch Hetchy  
(Total vs. Suburban Share)

Fiscal Year	SFWD contribution to Hetch Hetchy	Suburban share	Suburban contribution
1930	82,000	.07	6,000
1931	267,000	.07	19,000
1932	299,000	.07	21,000
1933	448,000	.07	31,000
1934	448,000	.08	36,000
1935	447,000	.08	36,000
1936	0	.07	0
1937	0	.08	0
1938	0	.12	0
1939	0	.14	0
1940	0	.15	0
1941	773,000	.15	116,000
1942	661,000	.17	112,000
1943	661,000	.16	106,000
1944	661,000	.18	119,000
1945	661,000	.19	126,000
1946	661,000	.20	132,000
1947	3,732,000	.22	821,000
1948	3,534,000	.24	848,000
1949	3,781,000	.26	983,000
1950	3,589,000	.27	969,000
1951	3,575,000	.29	1,037,000
1952	3,445,000	.30	1,034,000
1953	3,546,000	.31	1,099,000
1954	3,546,000	.33	1,170,000
1955	4,030,000	.36	1,451,000
1956	4,030,000	.38	1,531,000
1957	4,030,000	.40	1,612,000
1958	4,030,000	.41	1,652,000
1959	4,500,000	.45	2,025,000
1960	4,500,000	.46	2,070,000
1961	4,500,000	.47	2,115,000
1962	4,600,000	.49	2,254,000
1963	5,000,000	.51	2,550,000
1964	4,500,000	.53	2,385,000
1965	4,500,000	.53	2,385,000
1966	5,800,000	.55	3,190,000
1967	2,500,000	.56	1,400,000
1968	3,500,000	.57	1,995,000
1969	2,500,000	.57	1,425,000
1970	2,500,000	.59	1,475,000
1971	4,500,000	.58	2,610,000
Total	104,337,000	.41 Av.	42,946,000

SFWD Project Construction Expenditures Which Must be Recovered

Four categories of prior SFWD debt service costs also have been identified, for which the suburban customers have not yet repaid all of their equitable share.

Debt Service, 1928 Bond Issue.

The acquisition of the Spring Valley Water Company by the city and county of San Francisco was financed by the bond issue of 1928. The book value of the Spring Valley facilities at the time of purchase was as follows, by location:

Inside San Francisco	\$16,020,000
Outside San Francisco,	
north of Crystal Springs	7,173,000
Outside San Francisco,	
east of Crystal Springs	16,818,000

Total \$40,011,000

By employing the joint cost allocation factors developed in Chapter 8, which are based on proportionate use of the system by service area, it was determined that the equitable suburban share of this cost is \$ 12,422,000, or 31.0 percent of the total. The equitable share of the 1928 bond issue debt service costs which should have been contributed by the suburban customers is therefore 31.0 percent.

Debt Service, 1933 Bond Issue.

The construction of Bay Division Pipeline No. 2, the construction of the Crystal Springs to University Mound Pipeline, and the expansion of city storage and distribution facilities were funded by the bond issue of 1933. The amount utilized for each purpose was as follows:



Bay Division Pipeline No. 2	\$ 4,640,000
Crystal Springs/University Mound Pipeline	2,519,000
City storage and distribution	<u>4,851,000</u>
Total	<u>\$ 12,010,000</u>

By employing the joint cost allocation factors developed in Chapter 8, based on proportionate use, it was determined that the equitable suburban share of this cost is \$ 3,603,000, or 30.0 percent of the total.

That share of the 1933 bond issue debt service costs should therefore have been contributed by the suburban customers.

Debt Service, 1947 Bond Issue. The construction of Bay Division Pipeline No. 3, which went around the San Francisco Bay instead of under it, and the construction of the Sunset Supply Line and appurtenant facilities were funded by the bond issue of 1947. The amount utilized, by specific purpose, was as follows:

Bay Division Pipeline No. 3	\$ 9,804,000
Sunset Supply Line and appurtenant facilities	<u>2,696,000</u>
Total	<u>\$ 12,500,000</u>

Again, by employing the joint cost allocation factors developed in Chapter 8, it was determined that the equitable suburban share of this cost was \$ 6,758,000, or 54.0 percent of the total.

That share of the 1947 bond issue debt service costs should therefore have been contributed by the suburban customers.

Debt Service, 1961 Bond Issue. The equitable suburban share of the 1961 bond issue debt service is 51.8 percent, as derived in Table 8-10 per the discussion in Chapter 8.

#### Annual Assessment for SFWD Construction Cost Recovery

Table 9-7 indicates that the total suburban debt service obligation through June 30, 1971 was \$ 44,609,000, for all four bond issues combined.

Table 9-7 also indicates that only \$ 39,133,000 in suburban revenues had been contributed for that purpose through June 30, 1971, leaving a remainder of \$ 5,476,000 still due.

The data from which Table 9-7 has been summarized is shown in Table 9-10 at the end of this chapter.

**Table 9-7. Comparison of Suburban Revenues vs. Share of Expenditures  
Allocated to Suburban Customers, 3-3-30 through 6-30-71.**

Description	Suburban obligation	Total Suburban contribution	Balance due
Total revenues	170,999,000	145,867,000	25,132,000
Operating and maintenance expenses	31,250,000	31,250,000	0
<u>Other expenditures</u>			
Debt service (1928, 1933, 1947 and 1961 bond issues)	44,609,000	39,133,000	5,476,000
Capital expenditures	16,374,000	16,374,000	0
Property taxes	10,395,000	10,395,000	0
Hetch Hetchy payments	62,602,000	42,946,000	19,656,000
In lieu tax	5,769,000	5,769,000	0
Subtotal	139,749,000	114,617,000	25,132,000
Total expenditures	170,999,000	145,867,000	25,132,000

As indicated in Table 9-1, an annual capital recovery assessment of \$ 298,000 would also have to be included in determining the annual suburban cost of service, to provide for recovery of the outstanding suburban share of these prior costs.

#### Projected Suburban Revenues vs. Allocated Suburban Share of Expenses

On the basis of the allocations of joint costs developed in Chapter 8, plus the construction cost recovery requirements developed in this chapter, the projected annual suburban expenses have been determined for fiscal years 1971-1972 through 1976-1977, and are shown in Table 9-8.

Table 9-8 also demonstrates that with a 20.5 percent rate increase on January 1, 1973, suburban revenues would be \$ 2,337,000 less than the suburban share of expenses through fiscal year 1976-1977. (A 20.5 percent rate increase would result in parity between the average cost of water to the suburban resale customers and the average "wholesale" cost of water to the SFWD, as discussed in Chapter 10).

For cost allocation purposes throughout this study, proportionate use of facilities has been determined exclusively on the basis of average metered deliveries, rather than on the basis of respective peak deliveries.

The greater capacity that must be provided for transportation and delivery of water to the suburban users, in consequence of their greater peaking requirements, is therefore not reflected in any of the cost allocations.

**Table 9-8. Projected Suburban Revenues with a 20.5 Percent Rate Increase on 1-1-73 vs. Allocated Suburban Share of Expenses**

Description	Fiscal year						Total
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	
Projected Suburban revenues, with 20.5 percent rate increase on 1-1-73, (Table 6-7)	12,682,000	14,586,000	16,502,000	17,263,000	17,923,000	18,581,000	97,637,000
<u>Suburban expenditures</u>							
Operating and maintenance expenses (Table 8-9)	3,444,000	3,721,000	4,299,000	4,718,000	5,168,000	5,607,000	26,957,000
Taxes (Table 8-12)	939,000	1,013,000	1,089,000	1,164,000	1,242,000	1,320,000	6,767,000
Hetch Hetchy assessment (Table 8-12)	2,950,000	3,375,000	4,021,000	4,031,000	4,049,000	4,061,000	22,487,000
Bond interest (Table 8-12)	653,000	680,000	653,000	598,000	542,000	493,000	3,619,000
Bond redemption (Table 8-12)	1,092,000	1,327,000	1,408,000	1,408,000	1,408,000	1,409,000	8,052,000
Capital expenditures (Table 8-12)	1,906,000	2,271,000	2,592,000	2,573,000	2,539,000	2,472,000	14,353,000
Construction cost recovery (Table 9-1)	2,407,000	2,407,000	2,407,000	2,407,000	2,407,000	2,407,000	14,442,000
In lieu tax (Table 8-12)	440,000	488,000	563,000	583,000	604,000	619,000	3,297,000
Total Suburban expenditures	13,831,000	15,282,000	17,032,000	17,482,000	17,959,000	18,388,000	99,974,000
Surplus (deficit)	(1,149,000)	(696,000)	(430,000)	(219,000)	(36,000)	193,000	(2,337,000)

### Projected City Revenues vs. Allocated City Share of Expenses

On the basis of the allocations of joint costs developed in Chapter 8, the projected annual city expenses have also been determined for fiscal years 1971-1972 through 1976-1977, and are shown in Table 9-9.

Table 9-9 also indicates that with a 14.5 percent rate increase on January 1, 1973, city revenues will exceed the city's share of expenses through fiscal year 1976-1977 by \$ 2,337,000. (A 14.5 percent rate increase would result in parity between the average cost of water to the suburban resale customers and the average "wholesale" cost of water to the SFWD.)

The revenue requirements of the SFWD are discussed further in Chapter 10.

Table 9-9. Projected City Revenues with a 14.5 Percent Rate Increase on 1-1-73, vs. Allocated City Share of Expenses

Description	Fiscal year						Total
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	
Projected city revenues, with 14.5 percent rate increase on 1-1-73. (Table 6-7)	14,270,000	15,360,000	16,455,000	16,513,000	16,570,000	16,627,000	95,795,000
Miscellaneous income (Table 6-7)	1,583,000	1,710,000	1,837,000	1,964,000	2,091,000	2,218,000	11,403,000
Total city revenues	15,853,000	17,070,000	18,292,000	18,477,000	18,661,000	18,845,000	107,198,000
<b>City expenditures</b>							
Operating and maintenance expenses (Table 8-8)	8,342,000	8,816,000	9,270,000	9,808,000	10,353,000	10,980,000	57,569,000
Taxes (Table 8-12)	652,000	676,000	699,000	722,000	742,000	762,000	4,253,000
Hetch Hetchy Assessment (Table 8-12)	2,050,000	2,250,000	2,581,000	2,503,000	2,419,000	2,345,000	14,148,000
Bond interest (Table 8-12)	607,000	632,000	608,000	556,000	505,000	458,000	3,366,000
Bond redemption (Table 8-12)	1,017,000	1,234,000	1,310,000	1,310,000	1,310,000	1,312,000	7,493,000
Capital expenditures (Table 8-12)	3,375,000	4,019,000	4,588,000	4,555,000	4,494,000	4,376,000	25,407,000
Construction cost recovery (Table 9-1)	(2,407,000)	(2,407,000)	(2,407,000)	(2,407,000)	(2,407,000)	(2,407,000)	(14,442,000)
In lieu tax (Table 8-12)	1,068,000	1,154,000	1,213,000	1,211,000	1,209,000	1,212,000	7,067,000
Total city expenditures	14,704,000	16,374,000	17,862,000	18,258,000	18,625,000	19,038,000	104,861,000
Surplus (deficit)	1,149,000	696,000	430,000	219,000	36,000	(193,000)	2,337,000

**Table 9-10. Detailed Comparison of Suburban Revenues vs. Share of Expenditures Allocated to Suburban Customers, 3-3-30 Through 6-30-71.**

Description	3-3-30 thru 6-30-62	Fiscal year										Total
		1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71		
Suburban revenues	64,617,000	6,455,000	7,252,000	7,682,000	8,401,000	8,925,000	9,643,000	9,831,000	10,927,000	12,134,000	145,867,000	
Operating and maintenance expenses	11,387,000	1,386,000	1,584,000	1,700,000	1,903,000	2,186,000	2,448,000	2,625,000	2,975,000	3,049,000	31,250,000	
Other expenditures												
Debt services (1928)	21,435,000	422,000	408,000	394,000	380,000	366,000	352,000	338,000	324,000	0	24,419,000	
Debt services (1933)	4,414,000	0	0	0	0	0	0	0	0	0	4,414,000	
Debt service (1947)	5,191,000	536,000	528,000	517,000	134,000	80,000	76,000	50,000	1,533,000	0	7,112,000	
Debt service (1961)	5,612,000	72,000	327,000	340,000	1,099,000	885,000	1,377,000	1,455,000	1,556,000	1,586,000	8,664,000	
Capital expenditures	5,612,000	970,000	1,081,000	531,000	873,000	747,000	891,000	3,364,000	1,307,000	968,000	10,395,000	
Property taxes	4,460,000	506,000	537,000	554,000	551,000	609,000	641,000	889,000	782,000	866,000	10,385,000	
Hetch Hetchy assessments	41,422,000	3,000,000	2,700,000	2,700,000	3,480,000	1,500,000	2,100,000	1,500,000	1,500,000	2,700,000	62,602,000	
In Lieu tax	2,684,000	267,000	305,000	310,000	337,000	332,000	355,000	358,000	387,000	433,000	5,769,000	
Subtotal	85,248,000	5,773,000	5,886,000	5,346,000	6,854,000	4,519,000	5,792,000	7,955,000	8,853,000	6,523,000	139,749,000	
Grand total	96,630,000	7,161,000	7,480,000	7,046,000	8,757,000	6,705,000	8,240,000	10,580,000	8,828,000	9,572,000	170,999,000	
Surplus or (Deficit)	(32,013,000)	(706,000)	(228,000)	(636,000)	(336,000)	(2,220,000)	(1,403,000)	(749,000)	(2,099,000)	(2,562,000)	(25,132,000)	

Note: Total debt service for each bond issue through 1970-1971 is as follows:

1928 Bond Issue: \$ 78,771,000  
 1933 Bond Issue: \$ 14,712,000  
 1947 Bond Issue: \$ 13,171,000  
 1961 Bond Issue: \$ 16,726,000

## CHAPTER 10

### REVENUE REQUIREMENTS

The revenue requirements of the SFWD are equivalent to the total annual costs incurred in operating the department on a self-sustaining basis. Costs to be recovered through operating revenues include operating and maintenance expenses, property and in lieu taxes, the annual Hetch Hetchy assessment, bond interest and redemption expenses, and cost of capital improvements.

Among the major objectives of this study were the determination of (1) the revenue requirements through fiscal year 1976-1977; (2) how extensive a rate increase would be required to achieve those revenue requirements; and (3) how to equitably apportion the required rate increase between the city and suburban customers.

#### Capital Improvement Program

The planned capital improvement program, which was detailed in Table 5-3, will require a total expenditure of \$ 73,897,000 through fiscal year 1976-1977.

To equitably allocate the cost burden between the present and future customers of SFWD, it is proposed that approximately half of the cost of the capital improvement program be funded from operating revenues and approximately half be funded by the sale of bonds.

This will require a composite rate increase of 17.4 percent, effective January 1, 1973, and a new bond issue totaling \$ 38,875,000, between fiscal year 1972-1973 and fiscal year 1976-1977.

#### Projected Revenues at Present Rates vs. Projected Expenditures

The annual projected revenues at present rates are shown in Table 10-1, through fiscal year 1976-1977. In the same table, all of the projected expenses have also been shown for the same period of time. The difference between the projected revenues and the projected expenses is the amount available annually for capital expenditures. Funds on hand, and unsold 1961 series bonds, will provide an additional \$ 5,900,000 for capital expenditures in fiscal years 1971-1972 and 1972-1973. A total of \$ 22,916,000 will be available for capital expenditures over the six year period, based on present rates, of which \$ 17,016,000 will be derived from revenues.

Table 10-1. SFWD Projected Revenues at Present Rates vs. Projected Expenditures,  
Fiscal Years 1971-1972 through 1976-1977, Excluding Capital Expenditures

Description	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
<u>Projected revenues</u>						
Total (Table 6-6)	28,535,000	29,262,000	29,986,000	30,712,000	31,437,000	32,159,000
<u>Projected expenditures</u>						
Property taxes (Table 7-5)	1,591,000	1,689,000	1,788,000	1,886,000	1,984,000	2,082,000
Hetch Hetchy Assessment (Table 8-12)	5,000,000	5,625,000	6,602,000	6,534,000	6,468,000	6,406,000
Bond interest (Table 8-12)	1,260,000	1,312,000	1,261,000	1,154,000	1,047,000	951,000
Bond redemption (Table 8-12)	2,109,000	2,561,000	2,718,000	2,718,000	2,718,000	2,721,000
O&M expenses (Table 7-6)	11,786,000	12,537,000	13,569,000	14,526,000	15,521,000	16,587,000
In lieu tax (Table 10-7)	1,508,000	1,642,000	1,776,000	1,794,000	1,813,000	1,831,000
<u>Total expenditures</u>	<u>23,254,000</u>	<u>25,366,000</u>	<u>27,714,000</u>	<u>28,612,000</u>	<u>29,551,000</u>	<u>30,578,000</u>
Available for capital expenditures	5,281,000	3,896,000	2,272,000	2,100,000	1,886,000	1,581,000
<u>Additional sources of revenue</u>						
Sale of bonds	2,195,000	855,000	0	0	0	0
Other funds available	2,850,000	0	0	0	0	0
Unsold bonds and other unencumbered funds available	5,045,000	855,000	0	0	0	0
<u>Total funds available</u>	<u>10,326,000</u>	<u>4,751,000</u>	<u>2,272,000</u>	<u>2,100,000</u>	<u>1,886,000</u>	<u>1,581,000</u>

### Projected Revenues at Proposed Rates vs. Projected Expenditures

The annual projected revenues at the proposed rates are shown in Table 10-2, through fiscal year 1976-1977. An additional \$ 22,744,000 will be realized through fiscal year 1976-1977, as a result of the composite 17.4 percent rate increase proposed for January 1, 1973. A total of \$ 45,660,000 will then be available for capital expenditures, of which \$ 39,760,000 will be derived from revenues, as shown in Table 10-3.

### Funding of Capital Improvement Program

To supply the additional funding required for the capital improvement program, a new bond issue totaling \$ 38,875,000 will be required between fiscal year 1972-1973 and fiscal year 1976-1977.

Table 10-3 indicates the required bond sale, by year, to provide the difference between the planned expenditures and the projected revenues.







Table 10-3. Funding of Capital Improvement Program, With Composite 17.4 Percent Rate Increase

Description	Fiscal year						
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	Total
<b>Capital improvement program requirements</b> (Table 5-3)							
Available from revenues, with 17.4 percent rate increase on 1-1-73, (Table 10-2)	11,567,000	12,200,000	16,711,000	18,921,000	7,309,000	7,189,000	73,897,000
Unsold bonds and other unencumbered funds available, (Table 10-2)	5,281,000	6,290,000	7,180,000	7,128,000	7,033,000	6,848,000	39,760,000
Available from new 1972 bond issue, (Table 10-4)	5,045,000	955,000	0	0	0	0	5,900,000
Bond redemption for new 1972 bond issue, (Table 10-4)	0	6,296,000	10,538,000	13,925,000	3,857,000	4,259,000	38,875,000
Bond interest for new 1972 bond issue, (Table 10-4)	0	0	(315,000)	(842,000)	(1,538,000)	(1,731,000)	(4,426,000)
	0	0	(362,000)	(950,000)	(1,703,000)	(1,837,000)	(4,852,000)
<b>Total funds available</b>	10,326,000	13,441,000	17,041,000	19,261,000	7,649,000	7,539,000	75,257,000
<b>Capital Reserve Fund</b>	(1,241,000)	1,241,000	330,000	340,000	340,000	350,000	1,360,000

Table 10-4. Proposed New 1972 Bond Issue (\$39,000,000; 20 Years; 5.75 Percent)

Description	1973 series	1974 series	1975 series	1976 series	1977 series	Total
Proposed sale	6,296,000	10,538,000	13,925,000	3,857,000	4,259,000	38,875,000
Bond redemption						
1973-1974	315,000	0	0	0	0	315,000
1974-1975	315,000	527,000	0	0	0	842,000
1975-1976	315,000	527,000	696,000	0	0	1,538,000
1976-1977	315,000	527,000	696,000	193,000	0	1,731,000
Bond interest						
1973-1974	362,000	0	0	0	0	362,000
1974-1975	344,000	606,000	0	0	0	950,000
1975-1976	326,000	576,000	801,000	0	0	1,703,000
1976-1977	308,000	546,000	761,000	222,000	0	1,837,000
Net available, through 1976-1977	3,696,000	7,229,000	10,971,000	3,442,000	4,259,000	29,597,000

An analysis of projected costs for the period 1971-1972 through 1976-1977, indicates that 0.516 of the total costs to city customers are applicable to the cost of water production and transmission to the point of delivery to the SFWD, as shown in Table 10-8 at the end of this chapter.

On this basis, it was determined that a 20.5 percent increase in suburban rates and a 14.5 percent increase in city rates would create parity, as follows:

Resale customer	Projected whole-sale cost, at proposed rates	Projected deliveries in Ccf, 1971-72 to 1976-77	Average cost per Ccf
All suburban resale customers	\$ 97,637,000 (Table 9-8)	462,306,000 (Table 4-9)	0.211
City of S.F.	\$ 61,521,000 (Table 10-8)	291,540,000 (Table 4-10)	0.211

The objectives of parity at the wholesale cost level, as well as a composite total rate increase of 17.4 percent, will both be achieved by this apportionment. However, as was shown in Tables 9-8 and 9-9, the result will be \$ 2,337,000 less in suburban revenues and \$ 2,337,000 more in city revenues than is supportable by the cost of service study, for the period 1971-1972 through 1976-1977.

#### Adequacy of Income Test

To judge a business effectively as a going concern, adequate knowledge must be had of the business to evaluate its earning capability. Properly prepared

income statements will reflect the results of operation for specific accounting periods and will show whether or not the income to the business is adequate to meet its operating costs, including return of capital, and its debt service. Since municipally owned utilities are not expected to return a profit, a break-even net income would meet the test of a sound operation.

A pro forma income statement of the San Francisco Water Department for fiscal years 1971-1972 through 1976-1977 is shown in Table 10-5.

Table 10-5. Adequacy of Income Test

Description	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Operating revenue <sup>a</sup>	26,952,000	29,946,000	33,057,000	33,776,000	34,493,000	35,208,000
Less:						
Operating expenses <sup>b</sup>	16,786,000	18,162,000	20,171,000	21,060,000	21,989,000	22,993,000
Depreciation expense <sup>c</sup>	2,917,000	3,084,000	3,251,000	3,418,000	3,585,000	3,752,000
Taxes and in lieu payments	3,099,000	3,331,000	3,564,000	3,680,000	3,797,000	3,913,000
Operating income	4,150,000	5,369,000	6,071,000	5,618,000	5,122,000	4,550,000
Other income <sup>d</sup>	1,583,000	1,710,000	1,837,000	1,964,000	2,091,000	2,218,000
Gross income	5,733,000	7,079,000	7,908,000	7,582,000	7,213,000	6,768,000
Less:						
Annual bond interest	1,260,000	1,312,000	1,623,000	2,104,000	2,750,000	2,788,000
Net income	4,473,000	5,767,000	6,285,000	5,478,000	4,463,000	3,980,000

<sup>a</sup> Water sales only

<sup>b</sup> Includes Hetch Hetchy assessment

<sup>c</sup> Estimated

<sup>d</sup> Net income from miscellaneous operations

Under the going concern method, the annual revenue requirements at the break-even point would be the sum of the operating expenses, the depreciation expense, the property taxes and in lieu payments, and the interest on long term debt, as shown in Table 10-6.

Table 10-6. Revenue Requirements Test

Description	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Going concern revenue requirements at break-even point (Table 10-5)	24,062,000	25,889,000	28,609,000	30,262,000	32,121,000	33,446,000
Revenue requirements by the cost recovery method (Table 10-2)	28,535,000	31,656,000	34,894,000	35,740,000	36,584,000	37,426,000

The comparable annual revenue requirements, as determined by the cost recovery method, are also shown in Table 10-6.

Inasmuch as the latter amounts exceed the going concern income requirement, the income requirements developed in this report meet the fiscal test of sound business practices.

Proposed Annual In Lieu Tax

The projected annual in lieu tax payments by SFWD to the City and County of San Francisco will continue to be equal to the anticipated Municipal "non-paying" account revenues.

The term "in lieu" tax as used in this study is not intended to imply that this payment is a substitute for either a public utility ad valorem tax or for a public utility franchise tax.

It is simply a general administrative charge levied by the City and County of San Francisco in compliance with Section 64 of the Charter, and is comparable to the annual obligation to the general fund customarily required of municipally-owned utilities.

The Municipal non-paying revenues for fiscal years 1971-1972 through 1976-1977, based upon the proposed rate-increases, are shown in Table 10-7.

The projected annual in lieu tax payments vary from 5.6 percent of the annual revenues from the sale of water in 1971-1972 to 5.2 percent in 1976-1977, which is reasonable when compared to the practices of other municipalities.

The municipal in lieu tax is a general and administrative expense rather than a property tax, and has therefore been allocated on that basis.

**Table 10-7. Estimated Annual In Lieu Tax**

Description	Fiscal year					
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Municipal non-paying, City	1,293,000	1,405,000	1,519,000	1,539,000	1,559,000	1,579,000
Municipal non-paying, Suburban	215,000	237,000	257,000	255,000	254,000	252,000
Municipal non-paying, total <sup>a</sup>	1,508,000	1,642,000	1,776,000	1,794,000	1,813,000	1,831,000

<sup>a</sup> The annual in lieu tax is equal to the Municipal "non-paying" account revenues.

Capital Reserve Fund

The SFWD should maintain an unencumbered capital reserve fund of reasonable size, to meet emergency or other unanticipated needs not provided for in their annual budget.

A small annual contribution to such a capital reserve fund has therefore been included in the annual revenue requirements, beginning in fiscal year 1973-1974, in an amount equal to 1.0 percent of the annual revenues from the sale of water.

Cost Analysis for Determining Average Wholesale Water Cost to S.F.W.D.

The allocated city share of all SFWD expenditures for fiscal years 1971-72 through 1976-77, as shown in Table 9-9, totalled \$119,303,000.

The cost of bringing 291,540,000 Ccf of potable water to San Francisco was then determined to be \$61,521,000, by the apportionment shown in Table 10-8, while the cost of distributing that water within the city was determined to be \$57,782,000.

On this basis, the average "wholesale" cost of water to San Francisco for the period 1971-72 through 1976-77 will be 0.211 per Ccf.

**Table 10-8. Cost Analysis for Determining Average Wholesale Water Cost to SFWD  
(1971-1972 through 1976-1977)**

Description	Costs incurred by city customers		
	Wholesale	Distribution	Total
Operating and Maintenance Expenses			
Source of supply	3,117,000	0	3,117,000
Pumping expenses	684,000	2,495,000	3,179,000
Purification expenses	3,778,000	0	3,778,000
Transmission and distribution accounts	6,017,000	19,783,000	25,800,000
Customers' accounts expenses	0	5,772,000	5,772,000
Subtotal	13,596,000	28,050,000	41,646,000
Administrative and General	5,198,000	10,725,000	15,923,000
Total	18,794,000	38,775,000	57,569,000
In Lieu Tax	2,307,000	4,760,000	7,067,000
Property taxes	4,253,000	0	4,253,000
Ketch Hetchy assessments	14,148,000	0	14,148,000
Bond interest (1961)	3,366,000	0	3,366,000
Bond redemption (1961)	7,493,000	0	7,493,000
Capital expenditures	11,160,000	14,247,000	25,407,000
Grand total	61,521,000	57,782,000	119,303,000
Allocation factors	0.516	0.484	1.000

## CHAPTER 11

## WATER SALES

In Chapter 4, the recorded and the projected metered deliveries of water were indicated, by class of customer, for both the city and the suburban service areas.

In Chapter 6, the recorded and the projected revenues from the sale of water were shown, by class of customer, for both the city and the suburban service areas.

In this chapter, the characteristics of the various classes of customers are described, and the system revenues are related to metered deliveries, by location and class of customer, for fiscal year 1970-1971.

### Water Deliveries and Charges for Fiscal Year 1970-1971

Water deliveries and charges in fiscal year 1970-1971, for the entire SFWD system by location and class of customer, are shown in Table 11-1.

**Table 11-1. Water Deliveries and Charges, Fiscal Year 1970-1971, by Location and Class of Customer**

Class of customer	Metered delivery (10 <sup>6</sup> Ccf)	Service charges, dollars	Quantitative charges, dollars	Total charges, dollars	Number of active services, 6-30-71
<u>City</u>					
Residential	17.645	1,319,983	4,819,597	6,139,580	127,467
Commercial	23.405	784,240	5,275,402	6,059,642	25,554
Industrial	2.765	22,004	512,363	534,367	196
Docks and shipping	0.322	17,830	82,780	100,610	250
Municipal paying	0.362	25,556	88,050	113,606	194
Municipal non paying	3.686	61,995	1,215,294	1,277,289	910
Fire services <sup>a</sup>	-	-	-	-	2,227
Sub-total	48.185	2,231,608	11,993,486	14,225,094	156,798
<u>Suburban</u>					
Regular metered	2.671	28,594	521,103	549,697	522
Municipal utilities (for resale)	47.243	158,971	8,370,004	8,528,975	55
Private utilities (for resale)	15.668	39,021	2,801,800	2,840,821	20
Municipal non paying	0.948	15,998	199,365	215,363	36
Sub-total	66.530	242,584	11,892,272	12,134,856	633
Grand total	114.715	2,474,192	23,885,758	26,359,950	157,431

<sup>a</sup> Metered delivery for fire services included under municipal non paying. Service charges for fire services included under applicable class of customer.

San Francisco accounted for 42 percent of the water delivered and 56 percent of the revenues contributed, while the suburban service area accounted for 58 percent of the water delivered and 44 percent of the revenues contributed.

#### Comparison of Average Cost per Ccf of Water

The average cost per Ccf of water delivered in fiscal year 1970-1971 to each of the resale customers is shown at the end of this chapter in Table 11-7, and is 18.1 cents.

The average cost to resale customers in Santa Clara County was 17.7 cents, while in Alameda County is was 17.8 cents. However, in San Mateo County the average cost was 18.3 cents.

#### Number of Active Services, by Meter Size vs. Class of Customer

Table 11-1 also indicates that, as of June 30, 1971, there were 156,798 active services in San Francisco and 633 active services in the suburban service area.

Table 11-2 shows the distribution of the active services within San Francisco, by size of meter vs.class of customer.

Table 11-3 shows the distribution of the active services throughout the suburban service area, by size of meter vs. class of customer.

#### Meter Consolidations

Suburban resale accounts taking water through more than one connection within their service area are treated by the SFWD as consolidations, in which the individual meters are not billed separately. Instead, the readings of the individual meters are combined for billing purposes, so that the total consumption need only pass through the rate blocks once.

The service charge for a consolidation is established as if it had consisted of a single meter of equivalent delivery capacity.



## Water Sales

Table 11-2. Number of Active Services by Size vs. Class of Customer, City Only,  
June 30, 1971

Class of customer	Size of service												Fire services	Total
	5/8"	3/4"	1"	1-1/2"	2"	3"	4"	6"	8"	10"	12"	16"		
Residential	115,760	8,735	2,584	348	40	0	0	0	0	0	0	0	0	127,467
Commercial	14,567	1,624	3,809	2,975	1,714	566	206	65	20	1	5	2	0	25,554
Industrial	5	3	16	37	58	41	20	9	6	0	1	0	0	196
Docks and shipping	111	12	32	40	32	3	13	3	3	1	0	0	0	250
Municipal paying	4	2	12	26	55	59	28	6	2	0	0	0	0	194
Municipal non paying	251	63	111	112	224	53	55	28	10	2	1	0	0	910
Fire services	0	0	0	0	0	0	0	0	0	0	0	0	2,227	2,227
Total	130,698	10,439	6,564	3,538	2,123	722	322	111	41	4	7	2	2,227	156,798



**Table 11-3. Number of Active Services by Size vs. Class of Customer, Suburban Only, June 30, 1971**

Class of customer	Size of service										Fire services and hydrants	Total
	5/8"	3/4"	1"	1-1/2"	2"	3"	4"	6"	8"	Other <sup>a</sup>		
Regular metered	358	34	34	16	27	12	3	5	6	4	23	522
Municipal utilities	0	0	0	0	2	2	4	4	10	33	0	55
Private utilities	0	0	0	0	0	0	0	2	4	14	0	20
Municipal non paying	2	0	0	3	11	2	2	6	0	9	1	36
<b>Total</b>	<b>360</b>	<b>34</b>	<b>34</b>	<b>19</b>	<b>40</b>	<b>16</b>	<b>9</b>	<b>17</b>	<b>20</b>	<b>60</b>	<b>24</b>	<b>633</b>

<sup>a</sup> "Other" includes batteries and consolidations, consisting of multiple meters.

### Annual Revenues from Service Charges, at Present Rates

Table 11-4 indicates the derivation of the San Francisco service charge revenues, based on present rates, which were shown in Table 11-1.

**Table 11-4. Total Number of Active City Services as of June 30, 1971, and Annual Revenues from Service Charges at Present Rates, dollars**

Equivalent meter size, inches	Quantity				Annual service charge	Total service charges
	Mo. municipal (pay & non pay)	Monthly billing	Bi-monthly billing	Total		
5/8	255	339	130,104	130,698	9.60	1,254,701
3/4	65	115	10,259	10,439	15.00	156,585
1	123	365	6,076	6,564	22.20	145,721
1-1/2	138	736	2,664	3,538	37.20	131,614
2	279	850	994	2,123	67.20	142,666
3	112	610	0	722	118.80	85,774
4	83	239	0	322	186.00	59,892
6	34	77	0	111	372.00	41,292
8	12	29	0	41	596.40	24,452
10	2	2	0	4	855.60	3,422
12	1	6	0	7	1192.80	8,350
16	0	2	0	2	2384.40	4,769
Fire service	113	1,130	984	2,227	69.00	153,663
Other (misc)	-	-	-	-	-	18,707
<b>Total</b>	<b>1,217</b>	<b>4,500</b>	<b>151,081</b>	<b>156,798</b>		<b>2,231,608</b>

Table 11-5 indicates the derivation of the suburban service area service charge revenues, based on present rates, which were also shown in Table 11-1.

**Table 11-5. Total Number of Active Suburban Services as of June 30, 1971, and Annual Revenues from Service Charges at Present Rates, dollars**

Equivalent meter size, inches	Number of active services	Annual service charge	Total service charges
5/8	360	10.80	3,888
3/4	34	18.00	612
1	34	26.40	898
1-1/2	19	44.40	844
2	40	79.20	3,168
3	16	140.40	2,246
4	9	219.60	1,976
6	17	439.20	7,466
6 Cr	1	1,018.80	1,019
8	20	700.80	14,016
8 Cr	6	1,280.40	7,682
8 Mag	1	3,242.40	3,242
10	3	1,008.00	3,024
12	9	1,401.60	12,614
Consolidation	1	878.40	878
"	3	1,140.00	3,420
"	1	1,317.60	1,318
"	1	1,500.00	1,500
"	1	1,579.20	1,579
"	1	1,621.20	1,621
"	4	1,840.80	7,363
"	1	2,018.40	2,018
"	2	2,037.60	4,075
"	3	2,102.40	6,307
"	2	2,541.60	5,083
"	3	2,560.80	7,682
"	1	2,716.80	2,717
"	1	2,719.20	2,719
"	1	2,989.20	2,989
"	2	3,024.00	6,048
"	1	3,417.60	3,418
"	1	4,951.20	4,951
"	1	6,812.40	6,812
"	1	7,022.40	7,022
"	1	8,604.00	8,604
"	1	9,085.00	9,085
"	1	11,217.60	11,218
"	1	12,138.00	12,138
"	1	13,672.00	13,672
"	1	14,466.00	14,466
"	1	18,794.40	18,794
Fire service			
4"	2	86.40	173
8"	7	297.60	2,083
12"	1	596.40	596
Fire hydrants	14	103.20	1,445
Other*	1	8,095.00	8,095
Total	633	-	242,584

\* SF Airport, plus adjustment to balance.

### Suburban Water Consumption and Charges, by County

Suburban water consumption and charges in fiscal year 1970-1971, by county and by class of customer, are shown in Table 11-6.

With respect to total system revenues, San Mateo County accounted for 26 percent, Santa Clara County accounted for 13 percent, and Alameda County accounted for 7 percent of the total.

### Projected Water Sales Through Fiscal Year 1976-1977

New service charges and commodity charges must now be implemented, to become effective January 1, 1973, which will produce a composite 17.4 percent increase in annual revenues. This will be achieved by a 20.5 percent average increase in rates applicable to suburban customers, and by a 14.5 percent average rate increase within the city of San Francisco.

Projected annual water sales at these proposed new rates, through fiscal year 1976-1977, are shown in Table 6-7.

### Projected Annual Cost Increase to Each Resale Customer

The average cost per Ccf of water to each resale customer in fiscal year 1970-1971 has been shown in Table 11-7.

The approximate annual cost increase that will result for each resale customer at the proposed rates has been shown in Table 11-8, on the basis of the recorded deliveries and costs during Fiscal Year 1970-1971. These annual increases will escalate in subsequent years, in accordance with the projected changes in consumption quantities.

Table 11-6. Suburban Metered Deliveries by County, Fiscal Year 1970-1971

Class of customer	Metered delivery (10 <sup>6</sup> Ccf)	Service charges, dollars	Commodity charges, dollars	Total charges, dollars	Percent of total SFWD revenues
<u>San Mateo County</u>					
Regular metered	0.514	7,064	128,729	135,793	1
Municipal utilities	20.290	87,846	3,666,284	3,754,130	14
Private utilities	15.668	39,021	2,801,800	2,840,821	11
Municipal non paying	0.455	7,683	55,743	103,426	-
Sub-total	36.927	141,614	6,692,556	6,834,170	26
<u>Santa Clara County</u>					
Regular metered	1.452	13,707	249,808	263,515	1
Municipal utilities	18.185	46,225	3,170,727	3,216,952	12
Municipal non paying	0	0	0	0	-
Sub-total	19.637	59,932	3,420,535	3,480,467	13
<u>Alameda County</u>					
Regular metered	0.705	7,823	142,566	150,389	1
Municipal utilities	8.768	24,900	1,532,993	1,557,893	6
Municipal non paying	0.493	8,315	103,622	111,937	-
Sub-total	9.966	41,038	1,779,181	1,820,219	7
Suburban total	66.530	242,584	11,892,272	12,134,856	46
SFWD system total	114.715	2,474,192	23,885,758	26,359,950	100

Table 11-7. Average Cost per Ccf of Water to Each Resale Customer, Fiscal Year 1970-1971, dollars

Utility or District	Total deliveries, Ccf	Total cost	Average cost, per Ccf
<u>San Mateo County</u>			
Municipal Utilities and Water Districts			
City of Redwood City	4,293,000	760,000	0.177
City of Burlingame	2,342,000	428,000	0.183
Belmont County Water District	1,794,000	324,000	0.181
Menlo Park Municipal Water Department	1,732,000	320,000	0.185
City of Millbrae	1,465,000	270,000	0.184
Northcoast County Water District	1,348,000	241,000	0.179
Town of Hillsborough	1,339,000	255,000	0.190
City of San Bruno	1,290,000	245,000	0.190
City of Daly City	1,157,000	222,000	0.192
East Palo Alto Water District	1,022,000	184,000	0.180
Estero Municipal Improvement (Foster City)	692,000	126,000	0.182
Coastside County Water District	292,000	57,000	0.195
Westborough County Water District	249,000	48,000	0.193
Dimond Public Utilities District	174,000	36,000	0.207
City of Brisbane	148,000	32,000	0.216
Guadalupe Valley Municipal Improvement Dist.	115,000	27,000	0.235
Skyline County Water District	31,000	8,000	0.258
Palomar Park County Water District	20,000	5,000	0.250
Los Trancos County Water District	17,000	5,000	0.294
Cordilleras Mutual Water Association	3,000	1,000	0.333
San Francisco International Airport	766,000	160,000	0.201
Private Utilities (California Water Service Co.)			
San Mateo	5,791,000	1,021,000	0.176
South San Francisco	3,130,000	579,000	0.185
San Carlos	2,037,000	366,000	0.180
Menlo Park	1,936,000	358,000	0.185
Bear Gulch District	1,440,000	266,000	0.185
Woodside	678,000	124,000	0.183
Colma (Broadmoor)	352,000	66,000	0.188
Redwood City	304,000	59,000	0.194
San Mateo County total	35,957,000	6,593,000	0.183
<u>Santa Clara County</u>			
Municipal Utilities and Water Districts			
City of Palo Alto	7,926,000	1,386,000	0.175
City of Sunnyvale	4,255,000	752,000	0.177
City of Mountain View	3,293,000	582,000	0.177
City of Milpitas	2,196,000	397,000	0.181
Purissima Hills County Water District	448,000	85,000	0.190
City of San Jose (Alviso)	68,000	16,000	0.235
Santa Clara County total	18,186,000	3,218,000	0.177
<u>Alameda County</u>			
Municipal Utilities and Water Districts			
Hayward Municipal Water System	6,760,000	1,174,000	0.174
Alameda County Water District	2,008,000	384,000	0.191
Alameda County total	8,768,000	1,558,000	0.178
Total water sold for suburban resale purposes	62,911,000	11,369,000	0.181

**Table 11-8. Total Annual Cost Increase to Each Resale Customer with Proposed Rate Increase, Based on Fiscal Year 1970-1971 Consumption (dollars)**

Utility or District	Total cost, present rates	Total cost, proposed rates	Total annual cost increase
<b>San Mateo County</b>			
Municipal Utilities and Water Districts			
City of Redwood City	760,000	916,000	156,000
City of Burlingame	428,000	516,000	88,000
Belmont County Water District	324,000	390,000	66,000
Menlo Park Municipal Water Department	320,000	386,000	66,000
City of Millbrae	270,000	325,000	55,000
Northcoast County Water District	241,000	290,000	49,000
Town of Hillsborough	255,000	307,000	52,000
City of San Bruno	245,000	295,000	50,000
City of Daly City	222,000	268,000	46,000
East Palo Alto Water District	184,000	222,000	38,000
Estero Municipal Improvement District (Foster City)	126,000	152,000	26,000
Coastside County Water District	57,000	69,000	12,000
Westborough County Water District	48,000	58,000	10,000
Diamond Public Utilities District	36,000	43,000	7,000
City of Brisbane	32,000	39,000	7,000
Guadalupe Valley Municipal Improvement District	27,000	33,000	6,000
Skyline County Water District	8,000	10,000	2,000
Palomar Park County Water District	5,000	6,000	1,000
Los Trancos County Water District	5,000	6,000	1,000
Cordilleras Mutual Water Association	1,000	1,000	0
San Francisco International Airport	160,000	193,000	33,000
<b>Private Utilities (California Water Service Company)</b>			
San Mateo	1,021,000	1,230,000	209,000
South San Francisco	579,000	698,000	119,000
San Carlos	366,000	441,000	75,000
Menlo Park	358,000	431,000	73,000
Bear Gulch District	266,000	321,000	55,000
Woodside	124,000	149,000	25,000
Colma (Broadmoor)	66,000	80,000	14,000
Redwood City	59,000	71,000	12,000
<b>San Mateo County total</b>	<b>6,593,000</b>	<b>7,946,000</b>	<b>1,353,000</b>
<b>Santa Clara County</b>			
Municipal Utilities and Water Districts			
City of Palo Alto	1,386,000	1,670,000	284,000
City of Sunnyvale	752,000	906,000	154,000
City of Mountain View	582,000	701,000	119,000
City of Milpitas	397,000	478,000	81,000
Purissima Hills County Water District	85,000	102,000	17,000
City of San Jose (Alviso)	16,000	19,000	3,000
<b>Santa Clara County total</b>	<b>3,218,000</b>	<b>3,876,000</b>	<b>658,000</b>
<b>Alameda County</b>			
Municipal Utilities and Water Districts			
Hayward Municipal Water System	1,174,000	1,415,000	241,000
Alameda County Water District	384,000	463,000	79,000
<b>Alameda County total</b>	<b>1,558,000</b>	<b>1,878,000</b>	<b>320,000</b>
<b>Total water sold for suburban resale purposes</b>	<b>11,369,000</b>	<b>13,700,000</b>	<b>2,331,000</b>
<b>City of San Francisco</b>	<b>14,225,000</b>	<b>16,288,000</b>	<b>2,063,000</b>

## APPENDIX A

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